REPORT

OF THE

DEPARTMENT

OF

STREET CLEANING

FOR THE

Four Years Ending December 31, 1905

JOHN McG. WOODBURY,
Commissioner

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John McGaw Woodbury
Commissioner

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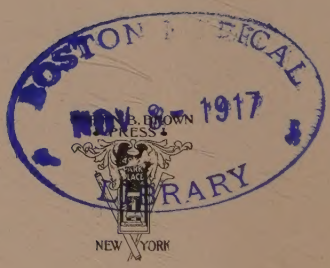

MICROFILMED
AT HARVARD

DEPARTMENT OF STREET CLEANING,
NEW YORK, February, 10, 1906.

Hon. GEORGE B. McCLELLAN,

Mayor of The City of New York:

SIR—I have the honor herewith to transmit my report of the operations of the Department of Street Cleaning for four years ending December 31, 1905.

I invite your attention to certain conditions which militate against the best results in the work of cleaning the streets by this Department.

First—The lack of control over the opening of the pavements for various purposes, the authority to grant permits for which is vested in another department. In this connection I might point to the fact that in the Borough of Manhattan there is not a continuous half mile of sheet asphalt pavement which has remained undisturbed for thirty days. To this difficulty may be added the uncleanliness resulting from the mixing of mortar and the depositing of sand and building material on the streets, caused by the rebuilding of the city.

Second—The fact that the increase in the street-sweeping force has not been proportionate to the increase of the area of streets to be cared for. Practically the same number of men which years ago attended to this work has now to sweep 77 more miles of street, a large portion of it twice a day, requiring the assignment of one sweeper to over half a linear mile.

Third—Sheet asphalt cannot be kept clean without the use of an abundant supply of water, and we have no water for this purpose.

Respectfully, your obedient servant,

JOHN McG. WOODBURY,
Commissioner.

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DEPARTMENT OF STREET CLEANING,
NEW YORK, December 31, 1905.

Hon. GEORGE B. MCCLELLAN,

Mayor of The City of New York:

SIR—I have the honor to report that the work of the Street Cleaning Department for the last four years has been as follows:

On December 31, 1905, there were in the Boroughs of Manhattan, The Bronx and Brooklyn 1,017.84 miles of paved streets to be cleaned by the Department of Street Cleaning. The population of these three Boroughs on that date was 3,743,217,* or a population per acre of 41.7 and per street mile of 3,677.

Population per acre, Manhattan	150.5
Population per acre, Brooklyn	27.3
Population per acre, The Bronx	10.4

The density of population per street mile of paved streets, exclusive of macadam, is:

Borough of Manhattan	5,449.4
Borough of The Bronx	3,412.9
Borough of Brooklyn	2,634.2

Some special cases will be of interest. Two blocks in the Borough of Manhattan on the lower east side have a density of population per acre of 1,171 and a density per street mile of 22,000, and one block of the same locality has a density of population per acre of 1,281 and a density per street mile of 23,500.

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* Data as to population is taken from report of the Department of Health.

The average haul in the Borough of Manhattan is 1¼ miles, in The Bronx 2 miles, and in Brooklyn ¾ mile. One cubic foot of ashes or street sweepings weighs, in round numbers, 48 pounds. The ordinary ash can of 3 cubic feet capacity carries seven pailfuls. The same can carries ten shovelfuls, while a pail takes 1 1-5 shovelfuls. The ordinary wheelbarrow load is 4½ pails. A can is 2 feet high and the rim of a cart is 5 feet above the pavement. There were removed from the Borough of Manhattan, The Bronx and Brooklyn last year 2,918,103 cartloads. This means 43,771,600 cans lifted 5 feet, or 306,401,000 pails lifted 5 feet, or 437,716,000 shovelfuls lifted 5 feet. If this work were done by wheelbarrows it would take an army of 150,000 men, working eight hours daily, to remove the waste to the water front dumps, and would make a pile of material covering a block the size of Madison Square Garden and 470 feet high, or 100 feet above the flag poles on the Park Row Building, and would take a row of carts 9,950 miles long, which would reach through the earth to China and project nearly 1,000 miles on the other side of the earth's surface.

The general method of work of the Department may be briefly stated as follows: The sweepers clean the streets and pile the material near the curb or place it in cans. It is their duty also to keep crossings clear in muddy weather. The cartmen make the rounds of their routes, collecting the household wastes, ashes, rubbish and garbage and street sweepings and remove them to the dumps on the water front or inland, as the case may be. The sweepers and cartmen employed in a section are under the supervision of their section foremen, whose duty it is to see that they are on the work and perform this work in a proper manner in their section. Several sections are under the supervision of a district superintendent, whose duty it is to see that the section foremen keep their men up to the mark. The district superintendents are under the charge of a general superintendent and an assistant general superintendent, and these come under the immediate direction of the Deputy Commissioner.

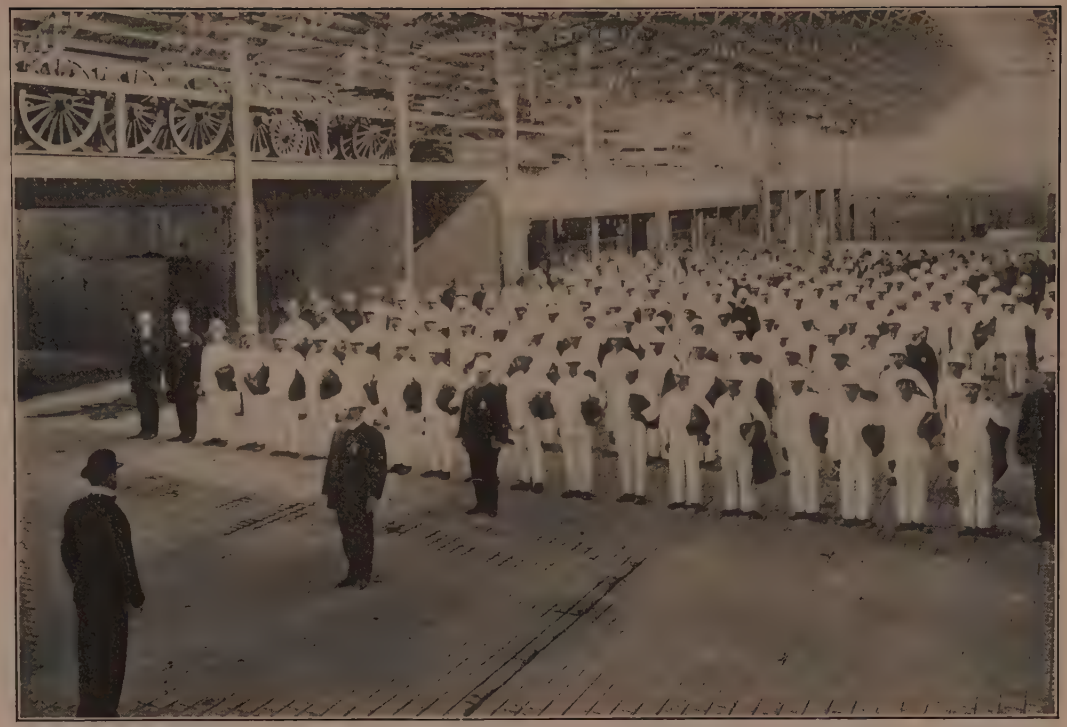
This will be explained more fully later on under the heading, "Organization."

Organization.

(See Illustration No. 1.)

The uniformed force of the Department of Street Cleaning on December 31, 1905, was as follows:

1 General Superintendent.
1 Assistant General Superintendent.
1 Superintendent of Stables.
1 Superintendent of Final Disposition.
1 Assistant Superintendent of Final Disposition.
20 District Superintendents.
96 Section Foremen.
189 Acting Assistants to Section Foremen.
18 Stable Foremen.
18 Assistant Stable Foremen.
37 Acting Assistants to Stable Foremen.
42 Dump Inspectors.
22 Assistant Dump Inspectors.



QUARTERLY INSPECTION OF OFFICERS, SWEEPERS AND DRIVERS.

Illustration No. 1, see page 6.

23 Boardmen.
41 Scowmen.
1 Master.
1 Mate.
4 Engineers.
5 Firemen.
12 Deckhands.
80 Section Station Keepers.
8 Incumbrance Yardmen.
2,434 Sweepers.
1,375 Drivers.
*305 Drivers detailed.
193 Hostlers.
1 Master Mechanic.
111 Mechanics.
101 Mechanics' Helpers.
6 Automobile Enginemen.

The several boroughs, Manhattan, The Bronx and Brooklyn, are divided as conveniently into territorial limits as the character of the district and the work necessary to be done require.

Each district is under the supervision of a district superintendent, and each district is divided into sections with a section foreman in charge and as many acting assistants to section foremen as the work and requirements seem to demand.

The number of sweepers in each section varies from 15 to 40, according to the amount of work necessary to be done in the section, which depends upon the business and traffic through it and the number of people living within its limits.

The greater portion of the work of actual sweeping is done by hand, and this work is supplemented by the use of machine brooms, which it has been found necessary to increase in later

*305 Detailed Drivers—The reason of these details is for the proper performance of the work of cleaning and keeping in sanitary condition the various Stables.

years to keep abreast with the increased area covered with asphalt paving.

There are in the boroughs of Manhattan, The Bronx and Brooklyn nineteen stables in all at which are stabled 1,971 horses.

The carting service, like that of the work of sweeping, changes considerably with the seasons; for instance, there are more drivers needed during the winter months than in the summer, while the opposite conditions obtain in the case of sweepers.

The drivers must, and do to a large extent, work in conjunction with and co-operate with the sweeping force, in order to collect the street sweepings that are accumulated daily, but in addition to this it is necessary for them to call at every house, domicile, store, hotel, in fact every place that is inhabited on the route assigned to each driver that he may collect therefrom the house accumulation of garbage, ashes and light refuse, which it is his duty to take to the dump. He is charged also with the care of a horse, horse equipment and cart, the value of which is approximately $500. His work is not only of a very exacting character, but is also laborious, and none but exceptionally robust men can continue as drivers in the Department for a very long period of time.

The clerical force of the Department is as follows:

1 Chief Clerk.
1 Chief Bookkeeper.
1 Law Clerk.
3 Bookkeepers.
34 Clerks.
8 Stenographers and Typewriters.
2 Telephone Switchboard Operators.
2 Messengers.

The discipline of the Department is as good as could be expected of men who are under its restraining influence only during working hours.

STREET SWEEPER AND HIS OUTFIT.

Illustration No. 2, see page 27.

OLD METHOD.—THE SWEEPINGS WERE LEFT BY THE SWEEPER IN A PILE IN THE GUTTER.

Illustration No. 3, see page 27.

The rules of the Department governing such discipline, following this paragraph, are fairly well observed considering all of the circumstances and the character of men who are employed as sweepers and drivers, and the supervision of the officers and the intelligence demonstrated by them are in many cases excellent, but naturally there are exceptions.

DEPARTMENT OF STREET CLEANING RULES.

"The following abstract of the offenses of Uniformed Force in the Department, and the penalties prescribed therefor, is published for the information and guidance of all concerned. Hereafter any offense will be reported (on the prescribed form and in the existing manner, through the Stable Foreman in the case of Hostlers and Drivers, and through the Section Forman approved by the District Superintendent in the case of Sweepers and Drivers while working on street), as a 1st, 2d, 3d or 4th violation of Rule ...., Sub-Division ...., and the recommendation for punishment must not *exceed* the code of penalties.

"When the prescribed penalty is dismissal, the offender may be suspended without pay awaiting the action of the Commissioner. A fourth violation of rules, of whatever character, will indicate that the man is incorrigible and may be dismissed.

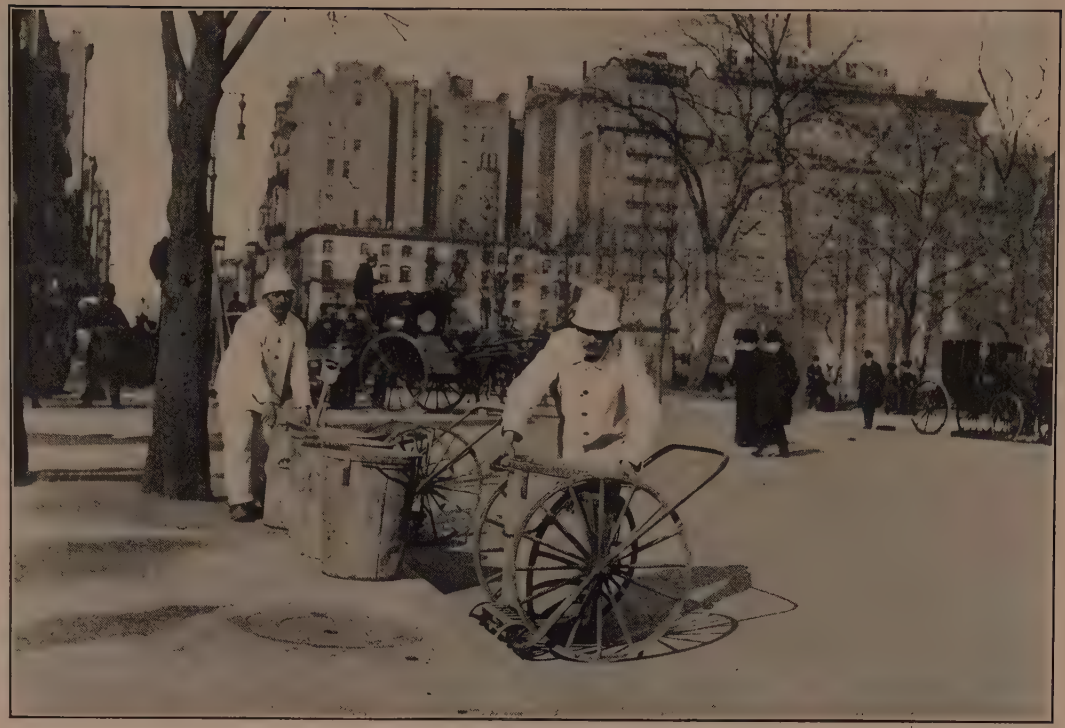
"Except in the case of men recommended for dismissal, there will be no suspensions. The punishment will be forfeiture of pay, and men who refuse to work, while subject to such forfeitures will be dismissed.

"This order will be posted on the bulletin boards at Stables, Section Stations, Dumps and Mechanical Bureau, and every employee of the Department will be assumed to understand it.

Explanation: "D" means Dismissal. 1, 2, 3, 5, and 10 means the forfeiture of so many days' pay.

Rule.	Sub-Div.	Character of Offense.	Offense. Penalty. 1st	2d	3d	4th
1	A	Absence for more than five days without authority of the Commissioner.....	D			
	B	Refusal to obey orders of superior officers..	D			
	C	Demanding a fee or gratuity for work done..	D			
2	A	Using abusive or threatening language to a superior officer.....	D			
	B	Wilfully breaking or destroying Department property, or purloining the same.....	D			
	C	Watering horses at public troughs contrary to orders.....	D			

Rule.	Sub-Div.	Character of Offense.	Offense. Penalty. 1st	2d	3d	4th
3	A	Having a helper or conductor with him without authority	D			
	B	Sorting over or picking over refuse or permitting others to do so	D			
4	A	Deliberately trotting a horse	10	D		
	B	Asleep on post of duty	10	D		
5	A	Failure to provide himself with or wear the prescribed uniform on duty	5	D		
	B	Failure to obey orders of superior officers	5	D		
	C	Being under the influence of liquor while on duty	5	D		
	D	Making false reports to superior officers	5	D		
6	A	Failure to remove bits and heel up the cart from the horse's back while feeding at noon	5	D		
	B	Mixing ashes and garbage or rubbish together	5	D		
	C	Removing improper material	5	D		
	D	Dumping ashes, garbage or refuse at any other place than that designated	5	D		
7	A	Being boisterous or using profane language or any incivility to citizens	3	5	D	
	B	Failure to take proper care of Department property or report any injury thereto	3	5	D	
	C	Failure or refusal to pay just debts contracted while in the service of this Department	3	5	D	
8	A	Reporting to the Medical Examiner in an intoxicated condition	3	5	D	
	B	Failure to report at once for examination to Medical Examiner upon receipt of certificate of illness	3	5	D	
	C	Guilty of language or conduct prejudical to good order and discipline	3	5	D	
9	A	Neglecting to have lost shoes replaced on horse at nearest Department stable as soon as practicable	3	5	D	
	B	Leaving cart, etc., and horse unattended in street without good reason	3	5	D	
	C	Failure to make a sworn statement regarding accidents or collisions	3	5	D	
10	A	Loitering at work	2	5	D	
	B	Accepting a fee or gratuity for work done	2	5	D	
	C	Neglect to close hydrants after use	2	5	D	
	D	Failure of Hostler to keep horses under his charge properly groomed	2	5	D	
11		Failure to report or send notice to Foreman when sick	1	2	D	



CANS ON THE SIDEWALK.

Illustration No. 4, see page 27.

NEW METHOD.—THE SWEEPINGS ARE PLACED IN A CAN UNDER THE SIDEWALK.

Illustration No. 5, see page 27.

Rule.	Sub-Div.	Character of Offense.	Offense. Penalty. 1st	2d	3d	4th
12	A	Feigning sickness in order to obtain excuse from duty	2	3	D	
	B	Failure to be at home for examination by the Medical examiner of the Department while absent under a certificate of illness	2	3	D	
13	A	Entering a liquor saloon in uniform	2	3	5	D
	B	Absence from post of duty without reasonable excuse	2	3	5	D
	C	Failing to turn over his dump ticket at end of day's work to Foreman or Clerk at Stable	2	3	5	D
	D	Wilfully obstructing the line of carts at the dump	2	3	5	D
14	A	Failure of Hostler to properly feed and water horses or neglecting to promptly report to Chief Hostler or Stable Foreman any indication of sickness or injury	2	3	5	D
	B	Neglect of Hostler to examine horses at least once during tour and failing to report any loose, broken or lost shoes or other circumstances needing attention	2	3	5	D
	C	Hostler allowing any manger or stall to become foul through neglect or carelessness	2	3	5	D
15	A	Failure to return to stable or Section Station promptly after work is over	1	3	5	D
	B	Failure to provide himself with the proper implements to perform the work assigned him	1	3	5	D
	C	Failure to report change of residence to Foreman	1	3	5	D
16	A	Driving, using or interfering with any horse, cart, harness, machine, etc., not assigned to him by proper authority	1	3	5	D
	B	Failure to replace receptacles within the stoop or area line after emptying	1	3	5	D
17		Smoking on Department premises or elsewhere where it is prohibited	3	5	10	D
18	A	Absence from roll call (within three months)	1	2	3	D
	B	Neglect to keep uniform in good condition	1	2	3	D
	C	Failure to sprinkle the street as directed	1	2	3	D
19	A	Failure to sweep properly	1	2	3	D
	B	Neglecting to keep load properly covered	1	2	3	D
	C	Failing to have cart number exposed	1	2	3	D

N. B.—In certain cases suspensions may be substituted for fines. May 1, 1903."

Any man who feels that he has been unjustly fined has an opportunity to bring his case before the Board of Appeal for further consideration. The Board of Appeal consists of the Deputy Commissioner, the General Superintendent and the Assistant Superintendent for the Boroughs of Manhattan and The Bronx, and for the Borough of Brooklyn of the Deputy Commissioner, the Assistant Superintendent and the District Superintendent in charge of the Borough of Brooklyn. At times the Commissioner sits as Chairman of the Board. He always sits as Chairman when the penalty is dismissal, as it is necessary for him to pass upon this evidence himself. All findings of the Board are submitted to the Commissioner for his approval or disapproval, and it appears that the work of this body is generally satisfactory.

The matter of procuring officers for this Department, as the law now stands, will have to depend upon men who were originally employed as sweepers or drivers, and unless this law is changed in the very near future it will be impossible to secure officers of sufficient intelligence to occupy the higher grades in the uniformed force. In my opinion this is a serious question that will have to be considered in the very near future, else the Department in this important respect will be laboring under a very grave disadvantage.

Sweeping.

The sweeper's uniform consists of a cork helmet covered with white cotton drill, encircled with a white leather band, ventilated from the top by a brass cap, which is likewise covered with the same white material, and also ventilated by a semi-detached sweat band. The single breasted blouse and the trousers are made of white duck. The blouse is buttoned up to the throat with buttons of a white metal. On the buttons is "D. S. C." in raised letters. The uniform cost is as follows: Helmet, $1.45; blouse and trousers, $1.20. Each sweeper is required to provide himself with two complete uniforms, except the helmet. The uniform for stormy weather consists of a southwester as a head gear and a long

SPRINKLING CART USED FOR SPRINKLING STREET BEFORE MACHINE SWEEPING.

Illustration No. 6, see page 27.

SWEEPING MACHINE.

Illustration No. 7, see page 28.

yellow oilskin coat and rubber boots. The cost of these articles is $2.50 for the coat and $0.40 for the hat. (See Illustrations Nos. 2-5.)

The broom has a block 4 inches by 18 inches, which is filled with 82 clusters of black African bass, 7 inches long. This broom weighs 5½ pounds and has a handle 66 inches long. It is what is known as a six-row broom. On the back of the broom is a metal scraper screwed to the block, to be used for loosening the sticky substances on the asphalt pavement. Each sweeper is equipped with a can-carrier weighing about 75 pounds, and a nest of 5 cans weighing about 37 pounds each. These cans are of about 3 cubic feet capacity. The cost of the can-carrier is $10 and of the cans $2.50 each. The sweeper is also provided with a short handled shovel and an asphalt pan scraper. This scraper is constructed like the ordinary dust pan, turned up at sides and back 3 inches. The pan measures 38 inches by 15 inches, and is made of crown or some other sheet steel equally as good. The handle is 68½ inches long.

The Department uses about 100 machine sweepers when the climatic conditions are such as to permit their use. These are rotary brooms, ordinarily called side sweepers. Various kinds of lifters and collectors have been tried, but as yet none of sufficient practical success to establish their usefulness. Without the use of these mechanical sweepers large areas in the outlying districts, which partake mainly of suburban characteristics, could not be cleaned at all.

Sprinkling carts are always used in conjunction with the sweeping machines, preceding them in order to lay the dust. These are principally the Austin and Studebaker patents. (See Illustration No. 6.)

Whenever the temperature of the atmosphere is above 40 degrees Fahrenheit the washing of asphalt pavements with water is the only true means of thoroughly cleaning them. In the densely populated east side districts between East Houston street, the Bowery and the East River, it would be perfectly impossible to

keep the surface in anything approaching proper sanitary condition without this washing. Hose in lengths of 50 feet, handled by two men, are coupled to the fire plugs and after the surface has been thoroughly wet down the loosened gum is driven by the force of the nozzle velocity. (See Illustration No. 7.)

In order to avoid the placing of collected sweepings in open cans upon the surface of the street there has been devised a receptacle for these cans in which they can be placed beneath the surface of the street, thus avoiding not only the blowing about of their contents by the wind, but their unsightly appearance. These are now being installed throughout the Borough of Manhattan.

During the dry season of the year sweepings are sacked and shipped to various out of town points along the lines of the railways leaving this city and used as fertilizer by farmers.

All material that is swept from stores or buildings or from the surface of the sidewalks is also collected in the centre of the street between curb and curb.

In regard to the matter of sweeping the streets in Brooklyn, which contains a paved area of 530.19 miles, with but 665 sweepers to do the work, would say that the task required of these men is so great and unfair that it is absolutely impossible for them to do it in as satisfactory a manner as might be desired. It is, however, done as satisfactorily as it is possible to do it with the number of sweepers mentioned.

There are distributed throughout the city section stations. These are used as a rendezvous for the sweepers and are fitted out with clothing lockers and running water for toilet and other purposes. At these stations the sweepers in each section assemble every morning before going to work (morning roll call at 7 A. M., when day's work commences; work is over when task is finished), change their plain clothes for the Department uniform, after which the roll is called and they are inspected by their foreman before being permitted to go to work, and any member of the section whose uniform is not clean and in proper condition other-

STREET WASHING WITH HOSE.

Illustration No. 7, see page 28.

OLD STYLE.—CANVAS COVERED ASH CART.

Illustration No. 8, see page 39.

wise is not allowed to work that day and his place is filled by a substitute called an extra man.

In like manner, after the day's work is ended, the roll is again called and the men permitted to change their uniform for plain clothes before returning to their homes. Each is also required on his return to the section station to account for all the tools supplied to him for that day for his use in the public service.

These section stations are as conveniently located throughout the city as circumstances will permit, there being in most cases a station for each section. They are roomy and properly ventilated and kept in a scrupulously clean condition by a man designated for the purpose, who is called the section station keeper, and whose duty, besides keeping the section station clean in every respect, is to look after the safety of the property of the Department lodged in the section station, and he is responsible also for the safety of the clothing and uniforms of the men assigned to the section.

In each section station there is a blotter provided in which any member of the Department or others visiting the section station for information connected with the Department, etc., are required to sign their names. There is likewise a property book kept where an account of all property taken in or going out is entered.

Carting.

Experience has taught the Department that a collection by the small unit of a cart drawn by a single horse is better for haul than collection by heavy trucks drawn by two or three horses.

The nineteen stables of the Department of Street Cleaning, in which are stabled 1,971 horses, are located at the most convenient points with the idea of saving distance of haul, and while they are, with two exceptions, rented from private owners, they bear in type of construction a general resemblance to one another. The type is of separate stall and not swing pole. The gangways

are covered with corrugated concrete. The bottom of the stall itself is of concrete covered with a grate of oak slats upon which the horse stands and which is portable. These frames are removed every day in order that the surface of the stalls, as well as the gangways can be washed down with the hose and water and afterward deodorized with some chemical agent.

As a rule the horses are stabled in the second floor and basement, the ground floor being used for carts, stable office and blacksmiths' shop, the upper floors for the storage of forage and harness, and here are located the harnessmakers' shops and property rooms, dispensary, etc.

Great care has been taken in arranging the ventilation of these stables in order that they may be neither too hot nor too cold and that the horses may receive a sufficient cubic air space. There is in course of construction in Brooklyn a stable, repair shop and administration building combined, which has been designed with great care and which when completed may be well held as a model for this type of construction.

The carting is done by 1,971 horses and 1,375 drivers. The driver's uniform is like the sweeper's, except that the color is brown instead of white. The reason for this change in color arises from the fact that the driver is engaged in loading his cart and the dust and ashes would render a white uniform so unsightly that in the course of a few hours it could not be worn. His equipment beside the horse and cart consists of a D handled scoop shovel and a short handled broom. The latter is particularly useful in picking up the last of small piles in the street.

The cart used is of the type known as a dump cart. The body of the cart is made of metal and without a tail gate, the bottom inclining up to the rim of the cart. This body rests on leaf springs. The running gear has a straight axle of 2½ inch steel. The reason for the heavy axle is on account of the weight of the material to be carried, which is approximately two thousand pounds, or by measurement, 1.55 cubic yards water measure.

NEW STYLE.—STEEL COVERED ASH CART BEING LOADED.

Illustration No. 9, see page 39.

NEW STYLE.—STEEL COVERED ASH CART IN THE ACT OF DUMPING ON SCOW.

Illustration No. 10, see page 39.

The weight of the cart is 1,480 pounds. With this cart is used a canvas cover fastened to the body in front and tied with ropes at the back. (See Illustration No. 8.)

The life of a cart varies according to circumstances and conditions and the repairs, including painting, cost approximately $30 per annum per cart.

Carts with sliding metal covers are now being introduced, and at present the Department is supplied with sixty-five of them. The body is equipped with a tail gate of metal attached to the arched cover, which is provided with gates so arranged that one slides over the other in such fashion that when one side is opened the other side is closed, or the cart is entirely inclosed by the sliding into place of both doors. This provides a water-tight cart having a fixed metal cover. It is slightly smaller in capacity and heavier than the uncovered cart, the weight being 1,780 pounds, but it provides a sanitary vehicle for the transportation of all the heavier waste material, as it is practically dust proof. The running gear is identical with the other cart. (See Illustrations Nos. 9 and 10.)

The paper cart is designed and constructed especially for the handling of light material. It has a long low body with a movable tail gate, is swung on a drop axle which brings it close to the pavement. The sides are furnished with racks rising 30 inches above the sides of the carts. These racks were added in 1904 when it was found that the load carried could be very much enlarged, as the material was bulky but not heavy. The average weight of a load is about 1,000 pounds, the capacity with side racks 7½ cubic yards, and the weight of the cart 1,285 pounds without the side racks and 1,410 pounds including the racks. (See Illustration No. 11.)

The ordinary style of top buggy is used by the district superintendents for the inspection of their districts and is necessary for their quick movement about the city. The section foremen are provided with bicycles with which to cover the territory assigned to them. Buggies are also supplied to the General

Superintendent and the Assistant Superintendent, who have to cover all the districts in the boroughs. For the general chiefs, the Commissioner and the Deputy Commissioner and superintendents in charge of the boroughs automobiles are provided.

There are distributed among the stables for transportation of tools and supplies the necessary number of express wagons and also heavy platform trucks which are used generally for removal of incumbrances. In addition to the above there is a derrick truck which is used for work on the dumps.

The horses are purchased under the following specification:

"Each horse shall be not less than five (5) years old nor more than eight (8) years old; not less than fifteen (15) hands two (2) inches high; weight not less than fifteen hundred (1,500) pounds; be sound, kind and true; be close coupled; have a short back; be deep ribbed; chunky built; have bone and feet proportioned to size and weight; and be in all respects fully adapted for cart purposes."

Each horse is fed 23 pounds of oats and 15 pounds of hay per day, 7 pounds of bran and 14 pounds of chopped feed per week, 100 pounds of straw are allowed per month per horse, and a piece of rock salt is kept in every manger.

The horseshoeing is done by contract at the stables. This formerly was done by contract or agreement outside the stables at shops, which was a source of great annoyance and inconvenience and extra expense to the Department, as the City horses were always made to wait the last turn, and in addition to this it required the services of men on duty at the stables to take the horses to and from the shops. The saving to the City in expenditure alone by doing the shoeing under contract in the stables of the Department in all of the Boroughs of Manhattan, The Bronx and Brooklyn, is $18,875 per annum, to say nothing of the greater efficiency and saving of time in the work being done on the premises and in a more workmanlike manner.

We are at present beginning the use of heavy rubber pads upon the front feet of the horses, which will give a better footing and will prevent many injuries and disability incident to the slippery winter conditions of pavement.

LIGHT RUBBISH CART.

Illustration No. 11, see page 39.

PAPER AND RUBBISH SIGN.

Illustration No. 12, see page 46.

The grooming as well as the feeding and bedding of the horses is done by the hostlers assigned to each stable under the immediate supervision and direction of the officer in charge at the time. Each hostler has assigned to him a gang of ten horses to be groomed and fed by him. For his grooming he is supplied with a currycomb and horse brush, a dander brush and a cleaning cloth. He is also supplied with a stable fork and broom for the cleaning of stalls and gangways.

After each horse is groomed he is personally inspected and passed upon by the officer in charge. The specific duties of feeding and grooming are considered most important.

The harnesses are all gone over every evening by men detailed to stable work and are thoroughly cleaned of all dirt or any other substances that may adhere to them before being used again and about one-third of all the harnesses in use are oiled and treated with harness dressing so that about every third night each set of harness is cleaned in the manner described. The brasses on the harness are kept polished, the horse collars scraped and refilled as necessity requires, the saddle pads, which are made of ticking and filled with cut straw, are changed twice each week and each time new straw is placed in these pads after the pad has been scrubbed clean and thoroughly sterilized by boiling.

It is found necessary to re-paint, re-number and re-letter the carts of the Department about once a year. These carts are thoroughly cleaned at least twice a week and oftener when the weather permits.

The collections are made daily of all classes of material, consisting of ashes, rubbish and garbage. When these are separated they can each one be finally disposed of by methods sanitary and to advantage, the garbage by reduction, the rubbish wastes by burning and developing heat, power and light, and the ashes upon land fill. When they are mixed together they are valueless and unsanitary.

Immediately after roll call, which is at 6.30 o'clock, the carts start on their tour of daily collection. Their first duty is to collect one or two cart loads of ashes and thereafter to collect all garbage until the entire garbage of the city has been brought to the dumps, which is before twelve o'clock noon. After the garbage on the cart route has been taken care of the cartmen go ahead with their ash collection and the collection of street sweepings. The length of the cart route depends entirely on the conditions to be met. In thickly populated districts the length of the route is necessarily short. In business centres the route is longer, and in outlying residential districts it is at its greatest. The materials collected by the ash cart, which also collects garbage and street sweepings, are separated by the householder and placed without the building, within the stoop line, and in separate receptacles. (See ordinances and laws governing the Department.) As New York is without alleys, it means that these unsightly receptacles must stand on the sidewalk.

The material is lifted by the cartmen and placed in the cart, the can is returned to its proper place and the cart passes on to the next building. When loaded it moves to the dump, and discharges its load on the scow placed to receive it; that is, if garbage, on the garbage scow, if ashes on the ash scow, and if rubbish, either at the furnace or on a separate scow. Where the terminal facilities do not permit of a separate scow, this rubbish is dumped on one part of the ash scow. Rubbish carts pass through their sections, the cartmen keeping his eye open for the paper and rubbish sign, which hangs in a conspicuous place on the house from which the rubbish is to be removed, the method being for the householder to keep within his premises such rubbish as should not go in the ash can or garbage can, make it up into bundles when it accumulates in sufficient quantity, and display a square sign with the initials "P. R." in white on a red ground. The back of this card has also general instructions as to the methods to be pursued, as follows: (See Illustration No. 12.)

RAILWAY ASH REMOVAL STATION.

Illustration No. 13, see pages 57 and 77.

CAR LOADED WITH ASH CANS FROM RAILWAY LOADING STATION.

Illustration No. 14, see pages 57 and 77.

BOSTON MEDICAL
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LIBRARY

"This card relates to the following articles:

Paper and rubbish,
Bottles,
Rags,
Excelsior,
Straw,
Mattresses,
Old Clothes,
Pasteboard Boxes,
Old Shoes,
Leather and Rubber Scrap,
Carpets,
House Refuse Generally.

"Hereafter nothing but garbage and food cans must be placed in the garbage receptacle, and nothing but ashes and dust must be put into the ash receptacle.

"All paper and other waste must be tied in bundles, or otherwise prevented from becoming scattered in handling. These bundles and all refuse, such as boxes, barrels, worn-out furniture, cast-off clothing, etc.; everything except garbage, dust and ashes, must be kept inside of the house or at least out of sight of the street, and protected from the rain. They must not be put into receptacles which are to be emptied and set back; they may be put into barrels or boxes which are to be taken away.

"When this card is exposed in the basement window or other suitable place, it will serve as a signal for the 'paper and rubbish' man to call on his next route.

"Take this card down after he has called.

"'Trade refuse,' unless consisting of paper, excelsior, straw, rags or wood, will not be taken. All other 'trade refuse' must be disposed of at your own expense.

"This card will upon request be replaced by the Department."

There is given also the list of separation for the householder to follow and this list is printed on a card and distributed throughout the city so that all may know exactly what to do with their waste and how to classify it. This card is as follows:

(Front)

Department of Street Cleaning, 13 Park Row, New York City.

It is forbidden by City Ordinance to throw any scrap or article into the street, or

Paper, newspapers, etc.,
Ashes or dirt,
Garbage or offal,
Banana skins,
Orange peel and the like.

Garbage will be collected before 12 o'clock noon.

Do not sweep the dirt from the sidewalk into the street. Sweep the dirt into a pile on the sidewalk, pick it up and put it into the ash can.

To sweep the dirt from the sidewalk into the street after the street has been cleaned is a violation of the law. Keep your sidewalks clean.

This law will be strictly enforced.

JOHN McGAW WOODBURY,
Commissioner.

(Back)

Department of Street Cleaning, 13 Park Row, New York City.

Keep Your Materials Separate.

The Sanitary Code, Section 108, requires householders and occupants to provide separate receptacles for ashes and garbage and forbids mixing these in the same receptacle.

This law will be strictly enforced.

Garbage put into Garbage Receptacles.	*Ashes put into Ash Receptacles.*	*Rubbish put into Rubbish Bundles.*
Kitchen or table waste,	Ashes,	Paper, pasteboard, etc.,
Vegetables,	Sawdust,	Rags, mattresses, carpets,
Meats,	Floor sweepings,	Old furniture, oil cloths,
Fish,	Street sweepings,	Old shoes, flower stems,
Bones,	Bottles,	Leather and leather scrap,
Fat,	Broken glass,	Tobacco stems,
Fruit.	Broken crockery,	Straw and excelsior from householders only.
	All tin cans,	(All rubbish such as described in this column must be securely bundled and tied. Boxes and barrels filled with paper, etc., will be removed with contents, and the boxes or barrels will not be returned.)
	*Oyster and clam shells.	

*Oyster and clam shells will not be removed from fish dealers, but must be removed at their own expense.

All rubbish described in third column must be kept indoors, and when ready for removal the red "P. & R." must be hung in a conspicuous place, and the driver of the paper cart will call for such rubbish.

JOHN McGAW WOODBURY,
Commissioner.

DUMPING ASH CANS ON LOW LANDS.

Illustration No. 15, see pages 57 and 77.

DUMPING BOARD AND SCOWS.

Illustration No. 16, see page 64.

It frequently happens that many complaints are brought to the Department on account of non-removal of material, and it almost as frequently happens that it is the fault of the householder in not following the instructions and thereby having mixed material in the receptacles. When they have this material so mixed it becomes necessary for them to remove it at their own expense.

In the Borough of Brooklyn since the installation of the thirteen receiving stations by the American Railway Traffic Company with which the Department has a contract for receiving and finally disposing of ashes, street sweepings and light refuse, the hauling has been considerably shortened, making it possible not only to give a more efficient service but likewise a more frequent one, and from and since the first of last June the household collections have been made daily instead of three times a week in some sections, twice in others, and only once a week in a portion of the borough, and the fact that they are able to collect more frequently naturally brings about a more sanitary condition of affairs throughout that borough than existed there prior to this contract going into effect. (See Illustrations No. 13-15.)

Besides the material brought to the city dumps by the Department carts there is an additional quantity hauled by "permit carts." These carts work under authority from this Department and are furnished with a permit stating the character of the material to be hauled and where it is to be dumped. They are also furnished with a permit from the Board of Health, provided it is their intention to haul garbage. This permit also states the material to be handled and where it is to be dumped, and the restrictions accompanying the permit.

These carts are necessary for two reasons: First, that they haul material which the Department is not permitted to haul, but which the City is required to dispose of if delivered on the City scows; second, that they are employed by private houses, hotels, etc., which require service at stated times during the day, or

whose owners or managers wish to have the material hauled during the night, as the Department does not give service before 7 o'clock in the morning or after 5 o'clock in the evening.

The cartmen holding these permits are required to handle the material separately, as the Department carts are required to handle it, and they are subject to all the rules and regulations of the Department, failure to comply with which results in the revocation of their permits. About one-fifth of the quantities collected in the Boroughs of Manhattan, The Bronx and Brooklyn is collected by the permit carts, but nearly all of this material is collected in the Borough of Manhattan. Permit cartmen are, however, gaining a foothold in the Boroughs of Brooklyn and The Bronx, and will probably increase their work in these Boroughs as the density in population increases.

Purchase and Issue of Supplies.

The supplies necessary for the conduct of the Department are purchased from time to time as needed, and if in small quantities, and not large in cost, orders are sent direct, but for supplies that may be needed in very large quantities at great cost contracts are let, and all such supplies are received and inspected by the property clerk, approved as to kind, quality and quantity by an inspector of the Finance Department, in conjunction with the Master Mechanic, of such supplies that pertain to the Master Mechanic's Bureau, if purchased under contract, and, after being finally accepted and becoming the property of the City and the Department of Street Cleaning, such supplies are issued from time to time by the property clerk to the different districts or to the master mechanic for the manufacture or repair of supplies by the mechanical bureau.

The property responsibility of the Department is most accurately kept and accounted for on regular returns especially prepared for the purpose every quarter, and all property that is worn out in the public service and is of no further use must

DELEHANTY STEAM DUMPING BOAT.

Illustration No. 17, see page 64.

OLD METHOD.—UNLOADING SCOWS OF MIXED REFUSE AT SEA.

Illustration No. 18, see page 69.

be duly condemned by an officer of the Department whose action must be approved either by the Commissioner or Deputy Commissioner, and all such condemned property is sold at auction to the highest bidder, the proceeds of such sales being turned in to the City Chamberlain.

Mechanical Bureau.

The work of repairs in the Boroughs of Manhattan, The Bronx and Brooklyn is done by 111 mechanics, 101 mechanics' helpers and 6 automobile enginemen, under the direction of a master mechanic.

In the four years covered by this report an average of 8,519 carts, wagons and other wheeled vehicles, 1,464 sets of harness, 6,159 cans of various kinds, and 3,882* asphalt scrapers were repaired each year.

This bureau has also attended to all repair work in the nineteen stables rented and owned by the Department, plumbing, carpentering, concreting and bricklaying, and has also added a new extension to Stable "H" in Brooklyn with 28 stalls, and at Stable "E" an addition of 48 stalls. The 75 section stations have been kept in order in regard to matters of plumbing, carpenter work, painting, glazing, etc. Work on the 14 water front dumps has included construction, alteration and repair of dumping boards, inspector's office, etc. A floating dumping board has been placed at Clinton avenue and Wallabout Creek. All the smaller repairs to the scows and steam dumpers are made by the Department employees, the more extended work being done by contract under the supervision of this bureau. All work that has been done in construction, lighting and painting at the fish market under the Williamsburgh Bridge, as well as repairs and extension to the incinerator at Forty-seventh street and the installation of a 150-horse-power boiler and 20 kilowatt electric light equipment at this same place, has been done by this bureau; also, it has added

*This number includes new asphalt scrapers made by the mechanics.

a fireproof floor and runway, fire hydrants, baling presses and heating system to the plant under the Delancey Street Bridge.

Final Disposition.

It is the province of the Bureau of Final Disposition to receive all material collected in the city by the Department carts and by the properly authorized permit carts and to finally dispose of the same, with the exception of the garbage, which is received and finally disposed of by the contractors.

A water front dump consists of a raised platform built on the City docks, sufficient in width to permit of the handling of trucks and carts, sufficient in length to permit of from two to three scows at a dump, constructed with an overhang to allow of the discharge of loads from the carts on the centre of the scow. (See Illustration No. 16.)

There is an inspector's office, where all cart loads are tallied by an assistant to the inspector, and reports are turned in daily to the Department.

The dumping board itself is under the direct control of the dump inspector, who looks after the proper separation of material, the proper loading of scows, including the trimming of the material on the scows, and who has supervision over all the Department and other employees working on and about the dumps.

During the years 1904 and 1905, 20 new scows were added to the Department scow fleet of 22, giving a total of 42 scows. These with the three Delehanty steam dumpers complete the floating equipment of the Department.

These Delehanty dumpers are held in reserve and are only put in use when through a stress of circumstances, generally brought about by heavy weather or a rapid increase of the ash output during the winter, it is impossible for the deck scows to handle the output. (See Illustration No. 17.)

The Department of Street Cleaning is called upon under the Charter to furnish a necessary number of harbor scows, to be so

RUBBISH ON THE BEACHES DURING TIME OF SEA DUMPING.

Illustration No. 19, see page 69.

CLEAN BEACHES—SEA DUMPING DISCONTINUED.

Illustration No. 20, see page 69.

located as the Supervisor of the Harbor may direct, to receive ashes from vessels plying in the waters of New York Harbor. There are eight of these harbor scows in present use.

The abolition of sea dumping has rendered a stake boat which was formerly anchored in Gravesend Bay unnecessary. (See Illustrations Nos. 18-20.)

The material classified as garbage, which is delivered on board the scows of the Sanitary Utilization Company, consists of the wastes derivable from the preparation of food, together with condemned vegetables, meats, fish, bones, fat and fruit. This material is hauled to the dumps which are designated and fitted for the reception of garbage, and there shot to the garbage scows, which are the property of the contractor. After leaving the cart the City is relieved of all responsibility, except the supervision of the contractor's work. That is to say, that it is done in accordance with the specifications and that all material is properly handled so as to prevent nuisances, etc.

When it lands on the scow the contractor's employees trim the material, and also cull such refuse as may be harmful to the machinery, such as cans, metal and china scrap, etc. The scows leave the dock immediately on loading and are towed an average distance of twenty-five and one-half miles to Barren Island, located a mile and a half within the entrance to Jamaica Bay. The factory is located on the northernmost end of the island, with a water front of about 500 feet, which is necessary not only for the handling of the material, but for the receipt of coal and for the shipment of fertilizer filler and grease. The greater part of the fertilizer or tankage goes to southern points, where it is generally made up for use in the cotton belt, as it seems to be particularly adapted for this section. It is shipped in bags which are placed on board schooners in about 500-ton lots. The grease is barreled at the plant and shipped generally to Europe, where it is refined and utilized. This garbage grease is called common soap grease and brown grease in the trades, and is sold on a sliding scale, which is governed by the price of tallow.

While the first plant was of sufficient average capacity, it was found that the average daily collections during July and August overtaxed the maximum working efficiency of it. Improvement in separation by this Department further increased the summer output and demonstrated the necessity for a large increase in the maximum capacity, which, as has been said, was provided for in the ensuing contract. Meanwhile the summer surplus was cared for by night and Sunday operation. This work was done to the thorough satisfaction of this Department and the Board of Health.

Improved methods of unloading and distribution are in force for the raw material, thus permitting the rapid unloading of scows, and all material is now under cover in steam tanks before five o'clock P. M. on the day on which it is received. This has done away with all night and Sunday work and has, therefore, effected a great saving in expense. The old and unsanitary system of steam-jacketed dryers has been done away with after a long period of experimental work. On June 15, 1902, direct heat dryers were installed, the vapor from which is more easily controlled and with the result of an immense saving in coal. (See Illustrations Nos. 21-23, 43.)

The above-mentioned changes, together with the replacing of the old-style four-screw presses, with its complication of working parts by the simpler and more effective hydraulic press and the establishment of shops for manufacturing of supplies and for repairs practically completes the mechanical changes that have been made for the better and more economical operation.

The new sanitary arrangements are: First, the evaporator to turn out the cleansed effluent. Second, the washing process to clean the gases from the digesters during cooking. Third, the emplacement of a new ventilation system for the press and cooking floors; and, fourth the replacing of the old dryers by direct heat dryers, which are simple and easy of sanitary control. These are four great steps in advance.

LOADING GARBAGE FROM SCOW ON TO CONVEYOR AT BARREN ISLAND.

Illustration No. 21, see page 70.

I submit herewith charts showing geographically the collections of garbarge in the Boroughs of Manhattan, Brooklyn and The Bronx for the years 1901, 1902, 1903, 1904 and 1905.

All the ashes, rubbish and street sweepings are disposed of upon land fill. The material from Manhattan and The Bronx being hauled to the water front, it has been scowed from the dumps to Riker's Island and to various other points where it has been placed upon fills behind bulkheads, such as the Newtown Creek, Tremley Point, Shooter's Island, Staten Island, Weehawken, Cromwell's Creek, Newark and Maurer, N. J. (See Illustrations Nos. 24-26.)

The places for the reception of this material are the public dumps along the water front in the Boroughs of Manhattan and The Bronx, and at the stations of the American Railway Traffic Co. in the Borough of Brooklyn.

There have been deposited at Riker's Island of ashes and street sweepings:

In 1902	378,881 cubic yards
In 1903	1,266,558 cubic yards
In 1904	1,418,893 cubic yards
In 1905	1,726,352 cubic yards

This has practically finished the fill on 63 acres on the westerly side of the Island. Thus, Riker's Island, which is City property, has already been raised to an area of 152 acres, which will accommodate the eleemosynary and correctional institutions of the City, leaving Blackwell's Island to be used for a public park, and the new fill at Riker's Island on the easterly side, preparations for which are being made by the Department of Docks and Ferries, is a fill of considerable area, not less than 140 acres.

In addition to Riker's Island there were 2,924,084 cubic yards placed in fills behind bulkheads for private individuals during the years 1902-1905, as follows:

In 1902, 963,933 cubic yards were placed in about eighteen fills, the most important being located at Newark, N. J., Newtown Creek, Tremley Point, Shooter's Island and Jersey avenue.

In 1903, 785,148 cubic yards were placed in about eighteen fills, the most important being located at Staten Island, Weehawken, Cromwell's Creek, Newark and Maurer, N. J. The fill at Cromwell's Creek is possibly the most important land fill made within the city limits in many years, as it has been finished as a public park and athletic field underneath and to both sides of the northerly approach of the Macomb's Dam Bridge, extending along the water front for the foundation and yardage of the boat houses upon the Harlem River, thus transforming what at low tide was an unsightly mud flat into a public recreation ground.

In 1904, 600,342 cubic yards were placed in about twenty-one fills, the most important being located at Staten Island, Weehawken, N. J., Shady Side, Bay Way and Newark, N. J.

In 1905, 577,661 cubic yards were placed in about eighteen fills, the most important being located at Staten Island, Weehawken, Newark, Brockway and Shady Side.

The well known value to the commerce of the City of New York of the stoppage of sea dumping, which was all too surely filling and fouling the harbor, it is not necessary to discuss, while the placing of the ashes, street sweepings and rubbish behind cribs for land fill has produced 80 acres of land owned by the City and a large amount of land owned by private individuals.

The possibilities of this reclamation are almost boundless. The lowlands on Jamaica Bay afford an almost unlimited supply of dumping ground. This fill, in connection with the dredging for the proper channels, would permit an almost unlimited extension.

Prior to 1904 the ashes, street sweepings and rubbish of the Borough of Brooklyn were collected and hauled to what were known as land dumps, except in one instance where they were hauled to the river front at the foot of Gold street and loaded on a scow. The land dumps were scattered on the periphery on the land side of the Borough of Brooklyn. It was recognized by the Department of Final Disposition several years before that the

CHUTE AND DIGESTERS IN GARBAGE REDUCTION PLANT AT BARREN ISLAND.

Illustration No. 22, see page 70.

land dumps were rapidly disappearing and that it would be but a comparatively short time before all the available dumps (that is, available for wagon haul) would be filled up and the City would be put to an enormous expense in increased haul, number of carts, horses, drivers, stable accommodations, etc., in order to continue the land dump system. A further extension of the scow system was not practicable, as the water front in Brooklyn is owned by private parties and not by the City, and it was found impracticable to secure a sufficient number of dumping boards conveniently located to make this system operative.

On the 28th of July, 1903, a five-year contract was entered into with H. Milton Kennedy, who subsequently transferred the contract to the American Railway Traffic Company for the final disposition of all rubbish, ashes and street sweepings collected in the Borough of Brooklyn. Owing to the sparse population and available land dumps in the sections of Bay Ridge, Bath Beach, Coney Island, Sheepshead Bay and the outlying districts of Flatbush, these sections were not included in the contract until such time as the Commissioner of Street Cleaning might direct that stations be established in these districts. These districts can probably be handled by the old methods of land dumps for another year or year and a half, when it will be found necessary to introduce the system which is now in the body of Brooklyn. (See Illustrations Nos. 13-15.)

In order to determine the location of the receiving stations, the populated portion of Brooklyn was divided so as to be covered by thirteen circles each of a mile radius and the collection station was located as near the centre of this circle as was practicable. In some instances, owing to the congested districts, these circles were shortened by from one-quarter to one-third of a mile. As a general principle, the collections made by carts are taken to the nearest station regardless of the sub-division of the city into street cleaning districts and sections, thereby minimizing the haul of the carts.

These stations are of two types. The station at Thirty-eighth street and Fourth avenue and the East New York station are

what is known as the hopper type. The character of the ground at these points permits the carts to drive into an upper story of the building and dump the loads into hoppers which are sunken in the floor. The entire upper portion of this building is enclosed to prevent the escape of dust. Patent dumping cars are run under these hoppers and the cars loaded by releasing the bottom of the hopper. These cars are then run out over the trolley lines of the city to the lowlands near Coney Island.

The remaining eleven stations are of the bin type. The carts drive in from the street on a level and dump into steel bins where are practically a seven-foot cube and have a capacity of nine and one-quarter cubic yards. The weight of one of these bins will run when loaded from five to eight tons, depending upon the character of material delivered, by the Street Cleaning Department. Originally each station was equipped with twenty bins and as the carts were supposed to average a yard and fifty-five hundredths, six cart loads were placed in a bin, giving the station a capacity of one hundred and twenty cart loads. Subsequently the number of bins at the station were increased so that in some instances as high as twenty-eight bins are placed in a station. When four bins have been filled, they are picked up by an overhead crane and placed upon a flat car which is run inside the station. After being loaded upon the cars the bins are covered with a close-fitting canvas cover to prevent the escape of dust and refuse. Steel covers were at first used, but were found unsatisfactory. The car is then taken over the trolley lines to the dumping ground.

In order to avoid annoyance in the neighborhood the stations are as tightly closed in as parcticable and except in freezing weather the loads of ashes are sprinkled by a jet spray while the load is being dumped.

The rubbish is delivered a these stations in separate buildings, where it is picked over by a contractor who has the privilege of taking out such valuable articles as he may desire. The remainder

GREASE BASINS AT GARBAGE PLANT, BARREN ISLAND.

Illustration No. 23, see page 70.

is either placed in the bins and sent to the dump with the ashes, or else it is tightly baled in steel baling presses run by electric power and transported to the East New York ash station, where a large incinerator has been established, and there it is destroyed. This incinerator has sufficient capacity to burn up practically all the refuse which otherwise would have to be taken in loose form to the dumps and used to fill in land.

At Third avenue and Third street a small incinerator was put to work in June, 1905, and has run successfully without any repairs since that time. At this point there is a belt conveyor to carry the material from the carts to the furnace, the pickers taking off such material as they desire. At this station as high as 60 loads, at 7½ yards per load, have been received and disposed of within twelve hours.

The East New York Incinerator has about four times the capacity of the Third Street Incinerator. From the refuse burned at the East New York Incinerator a sufficient amount of power is obtained to heat the construction and repair shops, the "Employees' Benefit Association," and all power required to run the steam hammers, air drills, etc., in the construction shops. There still is a surplus power which will be utilized in heating other buildings in the vicinity.

The average haul of the trolley cars from the receiving stations to the dump is ten miles, making a round trip for the car twenty miles. The magnitude of the work can better be understood by the statement that the railway company is each year transporting 1,000,000 yards of material an average of ten miles.

During the time this method of removal of refuse material has been in operation, about 85 acres of sunken land has been raised to the grade of the surrounding country and made good taxable area, whereas, before it was of little or no value, except as a mosquito breeding ground.

The first dump was established north of Neptune avenue and east of Coney Island avenue. Here the grade was raised 5½ feet.

At Woodhaven, near Jamaica avenue, 184,000 cubic yards were put in an old sand pit, which was frequently a menace to the health of the community.

If this contract had not been put in force, with the number and location of dumps constantly decreasing, while their distances from the collecting districts was lengthening and with the natural increase of material, due to the growth of population of Brooklyn, the equipment of carts, horses, drivers, stable room and stable help would have been doubled.

The Borough of Brooklyn has been given a daily collection, instead of a bi-weekly collection and is placed on the same footing as the Borough of Manhattan.

In the boroughs of Manhattan and The Bronx the City collects and finally disposes of 1,640,000 cubic yards of light refuse or rubbish, all of which is burnable, and has about the fuel value for steam purposes of green sawdust. It consists of every describable article of household waste. This material was formerly loaded on scows, mixed with ashes and dumped into the sea, where, being light, it easily floated in onto the beaches along the Long Island and New Jersey shores, where its presence in past years caused great complaint. In 1902 simple destruction of this material was begun at an incinerator located at Forty-seventh street and the North river. This simple destruction is satisfactory from both a financial and sanitary point of view. Very soon an attempt was made to utilize the heat derived from this combustion for purposes of steaming, and in 1903 a small electrical plant was installed for the lighting of one of the stables of the Department and of the docks and piers in the vicinity. (See Illustrations Nos. 27-29.)

In 1905 the idea of economically using the rubbish wastes to light municipal structures and buildings being beyond the experimental stage, a plant was constructed beneath the Williamsburg Bridge, where daily 1,050 cubic yards of light refuse are destroyed. During the night the heat is used to generate electricity to light the Williamsburg bridge, and in these hours

RECLAIMED LAND AT RIKER'S ISLAND.

Illustration No. *24*, see page 73.

350 I. H. P. can be developed per hour. The bridge and plant lights require about 180 kilowatts per hour when all are in operation. (See Illustrations Nos. 30-35.)

Cost of Plant.

Building, Furnace No. 1 and stack	$26,768 00
Conveyor with engine	1,875 00
Inclines for wagons	1,550 00
Furnace No. 2	4,000 00
Boilers and electrical generating plant	49,391 00
	$83,584 00

Cost of Operation per Day.

Cost of disposal at sea or on land fills. 1,050 cubic yards compress on scows after trimming to 315 cubic yards.		
315 cubic yards @ $0.1569		$49.00
Cost of buying electricity		80.00
Cost of labor, ash removal, supplies and repairs and interest	$45.22	
Saving per day	83.78	
	$129.00	$129.00

Saving per year	$30,360
Cost of plant	83,584
Saving in per cent. of cost	36.8%

There is included in the above no cost for labor charges in the incinerator plant, because the privilege of picking out the marketable rubbish on the belt conveyor pays the operating expenses, but the labor charges in the lighting plant are included. The material handled at the Delancey street plant is about one-fifth of the total output of the Boroughs of Manhattan and The Bronx.

When all the lamps are carried by the plant and are in active use, there are 180 2,000-c.-p. arc lamps, of which 163 are on the structure and the remainder in the buildings. There are also about 767 16-c.-p. incandescent lamps, 3 electric motors and about 20 electric heaters.

The following is a description of the plant published in the *Engineering Record,* issue of November 11, 1905:

"The first attempt on a large scale in this country to utilize the heat made available by burning rubbish has recently been begun in New York City. Many refuse destructors are in use abroad with varying degrees of success, but the system has never been thoroughly tested in this country, owing, no doubt, to the availability near most large cities of dumping grounds for refuse. The practice in garbage and refuse disposal in New York provides for three classes of these materials, which are collected and hauled away separately, namely, ashes, garbage and rubbish; this is known as the 'primary separation.' The front wall on the Delancey slip side is of hard-burned red brick with buff facing, while the other walls are of Eureka vitrified hollow blocks, 12 inches thick, keyed together with steel reinforcing bars. At 16 feet intervals in the side walls are 17 by 24-inch brick pilasters which carry the roof trusses independently of the block construction and also serve to furnish the necessary bracing for the block sections. The roof is of coal tar pitch and gravel on sheathing paper and roofing felt carried on 1-inch sheathing.

"The building is divided into two rooms by a fire wall, 12 feet high, extending crosswise through the middle, in front of which is the rubbish receiving and sorting department, and at the rear the furnaces and the boiler equipment for steam generation. The receiving room has a paved floor on a level with the street so that the rubbish carts may drive in and dump directly on the floor for sorting or on an apron conveyor which has been installed to elevate the refuse and carry it over the fire wall to the charging holes on top of the furnaces. A considerable space is provided between the entering doors on either side of the room and the conveyor, so that if the material is received faster than it can be elevated for proper sorting, the carts may be dumped on the floor until at a later time it may be raked onto the conveyor. At one side are inclines, the approach outside and exit within, by which wagons are driven directly to the charging platform above the furnaces.

UNLOADING ASHES FROM SCOWS ON TO CARS AT RIKER'S ISLAND.

Illustration No. 25, see page 73.

"*Sorting Conveyor.*—The sorting of the rubbish is a source of considerable revenue to the City, for valuable rubber, old garments, rags and various grades of paper are found in it. The sorting and removal of this material are let to a contractor, who keeps a force of workmen constantly picking over the refuse, all that is available being removed and packed for shipment. With the earlier methods of refuse disposal the revenue from this form of salvage was not large on account of the impossibility of properly going through all of the material received as it was dumped directly in cartloads from the docks into the scows, but with the installation of an apron conveyor at the Forty-seventh street incinerator, it was at once demonstrated that very large quantities of usable material can be sorted out when it is thus elevated slowly past the sorters, who are thereby enabled to examine carefully all of the refuse. By this method of sorting an average of 60 per cent. by volume of the entire receipts is removed by the trimming contractor, for which the City receives about $1.50 per ton.

"The arrangement of the conveyor is shown by the illustrations. It is of the apron type of the Jeffrey Mfg. Co. and has a total length of 89 feet from the lower end at the front of the building to the discharge point above the charging door on top of the furnace. The leaves of the conveyor are of 12-gauge steel, 6 inches in width with 6-inch side guards at each end, so that the whole forms a deep trough with 6-inch sides throughout. The leaves overlap so that the bottom is practically tight and the width of 4 feet gives ample carrying capacity. Each leaf is riveted to a link of the malleable-iron roller driving chain, the rollers running on 3 by 2 by 5-16-inch angles which serve as rails. The conveyor is driven by a 7 by 10-inch vertical slide valve engine, taking steam from the boiler plant, which is connected to the conveyor drive through a double reduction gear giving it a working speed of about 70 feet per minute. This engine is mounted on a platform above the division wall and is in charge of an engineer who overlooks the conveyor and trimmers and thus is enabled to operate without difficulty the conveyor at a speed most favorable for the trimming.

"The trimmers stand on four small platforms on either side of the conveyor adjacent to the division wall where the conveyor is about 10 feet to 12 feet above the floor. Between these platforms are light wooden bins into which the various classes of material are thrown and thus kept separated. The bins have openings at the bottom from which the sorted material is delivered to the floor for packing. The facilities for the trimming do not take up much room, particularly as no storage of this saved material is permitted on account of the fire risk.

"*Charging Platform.*—At the rear side of the building there is a platform, elevated 13 feet above the floor, with incline approaches up which wagons are driven to deliver refuse directly into the charging holes if desired. This platform, which projects over the top of furnace No. 2, is of fireproof construction, having a steel frame and cement floor laid on Herculean flat-arch tile. The floor framing is carried on steel posts so located as not to interfere with the handling of the furnaces. The inclined approaches are of timber, that for loaded wagons being outside where there was sufficient space to permit a rise of 1 to 10; the wagons leave the platform on the inside ramp, which has a fall of 1 to 6.

"*Destructors.*—For the incineration of the 40 per cent. of useless refuse which the trimmers allow to pass them on the conveyor, there are two destructors. Furnace No. 1 has wrought-iron grates and furnace No. 2 with plain cast-iron grates and both have large combustion chambers. The details of the furnace No. 1, first installed, are shown in the drawings. It occupies a floor area of 11x19½ feet and stands 10 feet 4 inches high. The side walls have 9 inches of common brick on the exterior, an air space of 4 inches and a 9-inch fire-brick lining. The interior has a 12-inch fire-brick arch, above which there is a filling of cinders to form a platform for the workmen who feed the furnace. The interior has a clear width of 4 feet 7 inches and a clear height from middle of grate to top of arch of 6 feet 2 inches. The side walls have buckstays of 8-inch channels, tied across by

FILLING IN LAND AT RIKER'S ISLAND BY USE OF A CONVEYOR.

Illustration No. 26, see page 73.

1⅜-inch rods; the feed holes are spanned by means of a special yoke construction. The whole structure rests on 18 inches of concrete.

"The interior of the furnace is divided by a cross fire-brick wall, 18 inches thick, into two cells longitudinally, each of which is 8 feet long inside. Each of these constitutes a complete furnace, having a feeding hole at the rear, two stoking doors at the front, two sets of grates and two ashpits. The feed hole is located so as to deliver the refuse to the grates over an incline at their rear; the hole is 24 inches square at the top and is fitted with a cast-iron facing for a tight-fitting cover. The grates are wrought iron bars, 5 inches wide and tapering from a thickness of ½ inch at the top to 3-16 inch at the bottom edge; these are riveted up in sections of three each for convenience in handling and have ⅞-inch air spaces between bars. The heavy cast-iron stoke doors slide in grooves at either edge and are heavily counterweighted for ease of opening. The gases of combustion pass upward and over to a cross flue at the rear, which has two outlets, one leading to the boiler and the other a direct by-pass to the stack flue. The arches over the furnace as well as those forming the roofs of the cross and stack flues are made of special-form arch fire-brick, while the stoking door holes are special-form interlocking blocks which tend to unify the construction. At the ends of both furnaces which face the division wall of the building there are large sliding doors, which open to an area of 3 x 4½ feet in order to admit into the furnace large pieces of furniture, mattresses, and the like without the trouble of breaking them up into pieces.

"The cross connecting flue is located approximately on the level of the furnace outlet, and in passing to the opening into the boiler setting drops nearly 3 feet in order to enter the boiler setting under the furnace arch. In passing to the stack flue it rises about 2 feet. This flue has on either side of the opening from the furnace an opening in which a fire-brick damper, 35 x 60 inches in area and 3 inches thick is arranged to

work up and down as required for shutting off either one or both outlets from the flue. These dampers, which are of special blocks held together by ¾-inch iron supporting rods, are raised and lowered in the slots in the flue by means of triplex chain blocks, mounted on light pipe frames. The stack flue is of similar construction, with fire-brick lining, and is carried 25 feet on a steel framework over to the stack. It has a barrier wall through the middle to prevent interference of draft between the furnaces.

"The second furnace has been built on a somewhat different plan, to the designs of Mr. F. L. Stearns, of the Department of Street Cleaning, although it is of practically the same size and embodies similar details of air-cell, side wall and top arch construction. A different arrangement of feed holes and grate has, however, been adopted and the furnace structure is approximately 18 inches higher over all. There is in this furnace only one side feed hole, the other hole being on the top of the furnace near the outlet end and about 3 feet in area to facilitate the introduction of mattresses, bundles of refuse, boxes and barrels. The side feed hole is located near the end opposite the outlet, and there are two different sets of grates, one above the other, so that partially burned matter from the upper set of grates falls to the lower set, where the combustion is completed. The principal details of the second furnace are shown in the accompanying cross-section.

"*Stack.*—On account of the proximity to the Williamsburgh Bridge a tall stack was necessary in order to deliver the waste gases of combustion well over the roadway. It was accordingly built 200 feet high so that its top is some 75 feet above the roadway of the approach at that point. It is a circular brick chimney built of hollow radial-moulded brick. It has a clear inside diameter of 4 feet 6 inches at the top and has a fire-brick lining varying from 4 to 5½ inches in thickness to a height of 134 feet above the foundation. An interesting feature of the lining is the method of supporting it on a helical row of

LIGHT REFUSE BEING LOADED ON SCOWS.

Illustration No. 27, see page 82.

corbels on the inside face of the outer wall; in this way the lining is made to form a continuous helical band, 16½ feet wide, winding upward on the inside, to which repairs can be easily made. The object of this helical arrangement is to prevent the outer column of the stack from cracking when exposed to sudden changes in temperature.

"The foundation is of concrete extending to a depth of 14 feet below the floor line, which is carried on piles driven down 25 to 30 feet over an area of 24 feet square. The stack has an outside diameter of 15 feet 10 inches at the base and 5 feet 8 inches at the top. It was erected by M. W. Kellogg & Co.

"*Operation*—Both of these furnaces, which have now been operated for several weeks by the Department of Street Cleaning, have proved satisfactory, the waste material burning rapidly and completely, with no smoke or offensive odor from the stack. A high temperature is generated continuously in the furnaces, so that no trouble is experienced with the draft from the opening of the feed holes, the draft, in fact, being in excess of the demands, on account of the tall stack. The furnaces are periodically stoked by means of long bars, so as to turn over the burning material and sift out the ashes.

"Practically no difficulty has been experienced, as anticipated, in periods of rainy weather when the refuse necessarily comes in wet. When the fire is once started by the use of boxes, barrels and other wooden refuse, the high heat thereby generated rapidly dries out the wet refuse as fast as it is charged into the furnace. When the fuel is wet the color of the smoke has a yellowish tinge, and when dry, a faint bluish-white color. The street sweepings are similarly burned with success, whether dry or wet; the latter are charged directly into the furnaces from the collecting wagons, which drive to the charging platform by means of the inclines at the side of the incinerator building.

"*Electric Station*—The boilers and electrical generating plant, installed in connection with the incinerator, are officially in charge

of the Department of Bridges, the purpose being to light the Williamsburg Bridge, and possibly some adjacent parks and school buildings. A separate building was built adjoining the rear of the incinerator building. Care was taken in the allotment of space to keep the working forces of the two departments entirely separated at all times, the power plant work extending into the incinerator building only to the boiler fronts, beyond which the entire space is devoted to the refuse disposal. The separate building for the electric equipment is 50 by 60 feet in size, with steel-frame construction and brick curtain walls, faced with buff-colored bricks, resembling the incinerator building very closely in general detail. This bulding has two bays, each 24 feet wide. One has an upper story for a storage battery, the lower floor being devoted to the generating equipment. The other bay, which is devoted to the auxiliaries and special purposes, extends the full height to the roof, 26 feet. The storage battery is to create a day load for the lighting plant. This structure is of fireproof construction, the roof being of reinforced cinder concrete with tar paper and gravel covering, the second floor is also of reinforced concrete, and all floors have a cement finish. For handling machinery in the engine room there is installed a 5-ton hand-operated traveling crane of 22½ feet span, which clears the floor by 14½ feet.

"*Boilers*—The boilers were necessarily located in close proximity to the furnaces and are accordingly in the incinerator building, between the latter and the stack. They consist of two Stirling water-tube boilers, each of 200 horsepower capacity, delivering steam at 150 pounds pressure. Each unit has 2,000 square feet of heating surface, consisting of 187 3¼-inch tubes. The three steam drums are each 12 feet long and 36 inches in diameter. The mud drum is 10 feet by 36 inches in size. Each boiler has a 2½-inch blow-off, with two valves in series, which delivers into the condenser overflow tunnel, and is fed through a 3-inch line from the feed pump in the other building. This feed line passes through an economizer coil in the stack flue connec-

SORTING ARTICLES OF VALUE FROM THE CONVEYOR AT 47TH ST. INCINERATING PLANT.

Illustration No. 28, see page 82.

tion before entering the boiler, which heats the feed to a high temperature. This coil consists of a manifold of 100 feet of 2-inch brass pipe in a framework carried on a shelf opposite a door in the setting, so that, by by-passing the feed line and breaking two union joints, the economizer coil may be removed complete for cleaning and inspection.

"The boilers, while normally operated by the waste heat from the incinerator furnaces, are provided with grates for coal, if it is necessary to shut down the incinerators. The grates are of the stationary cast-iron bar type, with ½-inch spaces, suitable for pea anthracite coal, and have an area of 6½ by 9 feet. Above the grate is the usual firebrick arch of the Stirling setting, to deflect the heat toward the tubes, below which the inlet flue from the incinerator enters.

"*Auxiliaries*—The auxiliaries are located in the adjacent building. There is a 7½ by 4½ by 6 inch Knowles duplex feed pump connected so as to deliver from either the city mains or the heater to the 3-inch feed line. This pump is controlled by a Kieley pump governor, which maintains the pressure on the feed line automatically. Each boiler has a Penberthy autopositive injector for emergency use, the supply being taken direct from the city mains. The feedwater heater is a Cochrane open type of 400 horsepower capacity, built by the Harrison Safety Boiler Works. It receives the exhaust of the feed and condenser pumps, and is fitted with a self-contained oil separator for the removal of entrained oil from the exhaust steam, and its supply of water is automatically controlled. The receiver capacity of the heater is about 130 gallons. To it is also delivered the high-pressure steam-piping trap drips, and the drips from the heating system of the building.

"*Piping*—The piping system is simple, consisting of a 7-inch line with 6-inch branches from each boiler, which leads across to the engine room. Here it is supported on brackets on the middle columns of the building, extending through to the engine

branches, of which there are two of 4-inch and one of 2½-inch pipe. This line is graded toward the engine room and ends in a condensation pocket drained by a Kieley steam trap. All of the high-pressure piping is of steel pipe with Van Stone flanged joints with corrugated copper gaskets; expansion is provided for throughout by long-radius bends. Each engine branch has a Cochrane separator immediately above the throttle valve. All the piping is covered with 85 per cent. magnesia sectional covering.

"*Engines*—There are two 100 kw. and one 50 kw. direct-connected units, the former consisting of cross-compound horizontal Ideal engines of 155 horse-power with generators between cranks, and the latter a similar cross-compound Ideal engine of 90 horse-power, all built by A. L. Ide & Sons, Springfield, Ill. The large engines have 12 and 20 by 12-inch cylinders and operate at 250 revolutions per minute, while the smaller unit with 9 and 16 by 10-inch cylinders runs at 300 revolutions per minute. These ratings are so taken as to permit an overload of 33⅓ per cent. to be carried continuously and the engines are guaranteed to regulate within 1 per cent. between half and full load.

"The engines are operated condensing, for which there are three independent Blake vertical beam jet condensors, those for the larger engines having 7½ by 14½ by 8-inch and that for the smaller unit 6 by 12 by 8-inch cylinders. Injection water is now taken from three wells on the property, the overflow being conducted to the river through an 8-inch discharge pipe. The wells have 12-inch casings and were driven 45 feet below the floor line. It is contemplated, however, to connect the wells to a suction main, so as to draw the injection water from the river. The exhaust lines are connected to atmospheric relief lines of 6 and 5-inch spiral-riveted steel pipe which lead to Sturtevant exhaust heads above the roof.

"Provision has been made for the heating of the building in winter by steam from the vapor pipe of the feed-water heater through a 5-inch branch, as shown in the drawing, connected

DISCHARGING END OF CONVEYOR AND HOPPER AT 47TH ST. INCINERATOR.

Illustration No. 29, see page 82.

above the shut-off valve and below the back-pressure valve. The radiators are supplied on a two-pipe system and the returns lead back directly into the heater. For emergency use, there is a live steam connection to the heating system through a reducing valve.

"*Electric Equipment*—The generators are multipolar, engine-type, direct-current machines, built by the Burke Electric Co., Erie, Pa. They are wound for 250 volts with special design for operating a 3-wire system with 125 volts on either side. Their ratings permit an overload capacity of 25 per cent. for two hours without a temperature increase of more than 15 degrees Fahrenheit above normal. The equalizing means for the 3-wire system are self-contained in the machines.

"The electrical distribution is controlled on an 8-panel switchboard of marble on an angle-iron framework. The board contains three panels for the control of the generators, one totalizing panel, and four feeder panels. The latter provide seven distribution circuits, two for local lighting and five for lighting the bridge, which is accomplished almost entirely by enclosed arc lamps connected on the multiple system. A blank space is left for additional distribution which the Department may add later. All of the wiring and the switchboard were installed by Reis & O'Donovan, New York. All feeders, generators and switchboard connections have been carried underground in vitrified conduits.

"*Heat from Destructors*—The amount of rubbish that can be consumed per unit area of grade is, of course, a variable depending largely on the nature and condition of the material burned. Damp refuse does not burn as readily as the dry material, and paper does not burn as readily alone as when mixed with boxes, barrels and other wooden refuse, mainly on account of the difficulty of clearing away the ashes. At the Forty-seventh street incinerator it was found that over 60 pounds of refuse can easily be burned per square foot of grate area per hour under almost any conditions. At the new incinerator plant, with more favorable conditions, this figure can be considerably exceeded so that for

the total grate area of the two furnaces of 146 square feet there is no difficulty in disposing of 10,000 pounds per hour.

"In the calculation of the capacity of boilers which should be installed for operation by these furnaces, the evaporative capacity of the rubbish was assumed at 1½ pounds of water per pound of combustible, which had been proved a safe figure at the Forty-seventh street incinerator, as well as in foreign plants. Thus, at this rate of evaporation, with the total grate area of 146 square feet and a combustion rate of 60 pounds of rubbish per square foot per hour, the total evaporative capacity would be 13,140 pounds of water, which, in accordance with the usual method of boiler rating, is the equivalent of over 380 boiler horse-power. The boiler capacity most suitable for the installation was thus seen to be 400 horse-power, and accordingly each of the boilers is of 200 horse-power nominal rating, although they have large overload capacities to take advantage of the extra amounts of heat that may become available under the more advantageous conditions of operation.

"*Costs.*—A comparison of the relative costs of disposal of rubbish by towing to sea and dumping and by the incinerator method recently made by Mr. H. de B. Parsons, engineer in charge of the design, is of interest. The amount of this class of refuse collected per day in the districts served by the Forty-seventh street incinerator was 728 cubic yards. In the following comparison this is assumed to be separated by the trimming contractor into 465 cubic yards of salable material and 263 yards of worthless refuse. The cost of dumping these 263 yards at sea at the lowest rate yet secured, 20.42 cents, would be $53.80. At the incinerator plant the daily fixed charges are: Labor, $8.33; foreman, $2.75; watchman, $2.12; supplies and repairs, $2.50; interest, $2.24; total, $17.94. The ashes amount to 3.1 per cent. of 263 yards, or 8.15 yards, which must be dumped at sea at a cost of at least $1.66. The total charges for disposal by incineration are thus $19.60, $34.20 less than by dumping at sea.

GENERAL VIEW OF WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 30, see page 85.

SORTING CONVEYOR AT WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 31, see page 85.

"At this rate the saving per year of 300 days over the old method of disposal will be $10,260, which represents a percentage on the first cost of the incinerator furnace and buildings, roughly assumed at $20,000, of 51.3 per cent. This figure also disregards the first cost of the conveyor and the boiler plant, as they both introduce additional economies, which necessarily alter the calculation. By means of the apron conveyor the trimming contractor is enabled to sort out from the refuse over 60 per cent. by volume, 35 per cent. by weight, which is marketable and brings back to the Department a revenue of $1.50 per ton, whereas in the former method of disposal little or no opportunity was given the trimming contractor to sort over the material. The economies due to the boiler plant are of course all net gain.

"The cost of the Williamsburgh Bridge plant was as follows: Rubbish incinerator, building, furnace No. 1, stack, etc., $26,768; conveyor with engine, $1,875; inclines for wagons, $1,550; furnace No. 2 with flues, $4,000; boilers and electrical generating plant, $49,391. Total, $83,584.

"The plant was designed throughout by Mr. H. de B. Parsons, consulting engineer for the Street Cleaning and Bridge Departments of the City of New York. The Department of Street Cleaning is represented by Commissioner Dr. John McGaw Woodbury and the Department of Bridges was represented by Commissioner Geo. E. Best. The general contractors for the installation were the Ralph J. F. Gerstle Co."

Snow Removal.

In the winter of 1901-1902 the snow removed by the Department of Street Cleaning amounted to 843,964 cubic yards. This was done at a contract price per cubic yard of 36¾ cents and hauled to the water front. The contractor being allowed a ticket or a certain number of tickets per load, depending upon its size, which were checked at the point of loading and again punched or marked at the dumping place. This method employed all the

officers and about one thousand men of the Department of Street Cleaning, who acted as loading and dump foremen, inspectors and superintendents for the contractor. This frequently brought the other work of the Department, particularly carting and collecting, nearly to a standstill, but there was no other way of finally checking up the accounts. (See Illustrations Nos. 36-38.)

In the fall of 1902 the present method of contract for removal of snow was deviced, which is practically the letting of the cleaning of a given area by the contractor, the cubic yardage to be determined from the depth of snow as reported by the United States Weather Bureau. This practically releases all but very few of the officers of the Department of Street Cleaning from supervision of the contractor and permits them to continue their regular work while, at the same time, the areas are not paid for unless turned in as cleaned by the district superintendents, inspected by the superintendent in charge of snow removal and the officers of the Department of Finance. By this method in the winter of 1904-1905 the snow fall of 59.2 inches was cleared from 907.5 miles of streets in the Boroughs of Manhattan and The Bronx at an average cost of 20.43 cents per cubic yard. This year the contract price for the Boroughs of Manhattan and The Bronx has dropped to an average of 14 cents per cubic yard.

Street Incumbrances.

The incumbering of the streets by push carts, unused vehicles and by boxes, bales and merchandise and movable property of various sorts, by which a portion of a street is, to a certain extent, turned into a storehouse for the benefit of an owner or occupant of abutting property, is a serious hindrance to this Department in the cleaning of the streets. For this reason the Charter, besides making the act of so obstructing a street a misdemeanor, punishable by fine and imprisonment (Section 1456), also makes it the duty of the Commisisoner of Street Cleaning

FEEDING WASTE REFUSE INTO FURNACE AT WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 32, see page 85.

to remove, or cause to be removed, all such incumbrances (Section 545), allowing the owners of the property so seized and removed by the Department an opportunity to redeem the same on payment of not more than ten dollars for each article removed. By the same section, the Commissioner is authorized to sell from time to time the property so removed by the Department and not redeemed by the owners; the proceeds of the sale of each article over and above the expense of seizure, removal and sale, are payable to the owner, the balance is to be credited to the appropriation of this Department for any of its purposes. (See Illustrations Nos. 39, 40.)

The immediate performance of the duty of keeping the streets clear of movable incumbrances is committed to experienced officers and men in each of the Department's districts; the superintendent being amenable to the Commissioner for the proper enforcement of this law in his district.

Originally in this city, as in other cities, peddlers were merely tolerated. There were, as they still are, wandering and generally irresponsible competitors of the regularly established store-keepers, who own their stores, or pay rent for them and hire salesmen, pay taxes and bear the ordinary burden of citizens, etc. The peddler as known to old-time New York, when the ordinances regulating him were first adopted, carried his goods, consisting of tape, buttons, hooks and eyes and the other "Yankee notions," in a pack on his back and went about from house to house. Modern New York peddlers congregate in large numbers, in competition with the regular store-keepers and with one another, and each locates his movable store, for that is what it is, almost wherever he chooses, but usually in the narrowest and most crowded thoroughfares, and though in violation of the ordinances which tolerate the nuisance of these push-cart markets, so close to one another that often for the length of a block the ordinary foot passenger cannot find room between these push-carts to cross the street. As a consequence, within a few years the streets of certain parts of the city have come more and more to resemble the bazaars of the semi-barbarous towns of the

Orient, as well in their disorder as in their want of cleanliness and attention to the elementary notions of sanitation. Satisfactory cleaning of streets where push carts are tolerated is not possible.

One more point as to street incumbrances in relation to cleaning streets. The placing of building materials in the street has long been regulated by ordinances. These original ordinances of old New York and Brooklyn were adopted before the creation of the Street Cleaning Department and the issuing of the permits for placing these materials was therefore committed in New York to the Commissioner of Public Works, and in Brooklyn to the Commissioner of City Works.

The Greater New York Charter, section 547, provides that "All the powers and duties" previously conferred upon any officer or board, etc., in relation to "the issue of permits to builders and others to use the streets but not to open them" are vested in the City and as a matter of administration "devolved upon the Commissioner of Street Cleaning." Heretofore, this devolution of powers and duties has been practically a dead letter. These permits have continued to be issued by other officers than the Commissioner of Street Cleaning.

The great increase of building operations makes this a matter of importance. Experience has shown that a large proportion of the builders habitually violate the terms of the permits issued by subordinates of the Borough Presidents, as to the extent of front occupied by the materials, as to the proportionate width of the street occupied, as to keeping open the gutters, and as to the protection of the pavements on which the materials are laid. In addition, citizens constantly complain that in fine weather it is almost impossible to keep their windows open on account of the dust which flies in all directions from ill-kept building materials. In many cases the asphalt pavements have been greatly damaged, and in some cases practically destroyed, because, in defiance of the conditions of these permits, planking has not been laid down under the materials.

END VIEW OF FURNACE AT WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 33, see page 85.

Good administration would seem to require that one authority, and one authority alone, would issue permits and enforce their conditions. Now, what is the fact? It is the Department of Street Cleaning, with its more than five thousand sweepers and drivers, constantly at work all day and every day on all the paved streets of the City that first comes into contact with the materials left in the streets under the authority of these permits. It is the Department of Street Cleaning alone of all the City departments which suffers in the obstruction of its work by the failure of builders to comply with the requirements of these permits. It is the Department of Street Cleaning, and the Department of Street Cleaning alone of all the City departments that can at once, and effectually compel compliance of builders with the requirements of their permits, if these permits were issued by the Commissioner of Street Cleaning and could be revoked by him for non-compliance with their conditions.

Push Cart Market.

In an endeavor to mitigate the push-cart nuisance parts of the city which were fit practically for no other use were sought for with the view of establishing push-cart markets so as to remove as many as possible of these curious trespassers from the street proper, to permit of the efficient cleaning of the pavement. Also to permit of a careful supervision of the food sold from these vehicles. To this end the spaces under the Manhattan approach to the Williamsburgh Bridge were selected as being the most available, and on the 15th day of April, 1903, the first market was established and put in operation at the side of the bridge approach on Delancey street. The applicants drew for their places and were required to keep the pavements thoroughly cleaned. These pavements on which the carts were stationed were of asphalt. (See illustrations Nos. 41, 42.)

In the course of time this market was covered and lighted, and from numberless objections before it was started there came

many requests for the enlargement of the market or for a stall within its limits.

On May 5, 1904, the spaces under the bridge having been prepared, all the stands were moved from the open street under the bridge, thus making unnecessary the temporary canvas covering. There are now installed 771 stands of a standard pattern. The area of the market is 69,120 square feet. At 4 o'clock each afternoon, with the exception of Thursday, the market square is washed down by the Department of Street Cleaning and the market stands washed out by their owners and piled in a space reserved especially for that purpose. These stands are brought out again the following morning and are in use until 4 o'clock.

It is earnestly recommended as a policy of economy that immediate steps be taken to acquire by purchase all of the stable properties now rented and occupied for the use of this Department, together also with yards that are used for either storage or incumbrance purposes. This recommendation is due to the fact that rentals are constantly increasing and that whenever it becomes necessary to renew a lease a larger rent is invariably demanded and as no property can be acquired in the future for less than the present market price, it seems to me that it would be wise economy to purchase these different properties at the present time. Further than this, the acquisition of all such properties would result in giving stability of location to the properties now used for the purpose named.

Respectfully,

JOHN McG. WOODBURY,
Commissioner.

SIDE VIEW OF FURNACE AT THE WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 34, see page 85.

STATEMENT OF INCUMBRANCES.

Boroughs of Manhattan and The Bronx.

1902.

Number of incumbrances removed	.....	5,376
Number of incumbrances redeemed	4,365	
Number of incumbrances released free	73	
Number of unredeemed incumbrances sold at auction	867	
Number of incumbrances remaining on hand December 31, 1902	71	
	5,376	5,376

1903.

Number of incumbrances removed	.....	5,154
Number of incumbrances redeemed	3,817	
Number of incumbrances released free	65	
Number of unredeemed incumbrances sold at auction	871	
Number of incumbrances remaining on hand December 31, 1903	401	
	5,154	5,154

1904.

Number of incumbrances removed	.....	8,631
Number of incumbrances redeemed	5,660	
Number of incumbrances released free	76	
Number of unredeemed incumbrances sold at auction	1,100	
Number of incumbrances remaining on hand December 31, 1904	1,795	
	8,631	8,631

1905.

Number of incumbrances removed	.....	9,573
Number of incumbrances redeemed	6,166	
Number of incumbrances released free	56	
Number of unredeemed incumbrances sold at auction	1,943	
Number of incumbrances remaining on hand December 31, 1905	1,408	
	9,573	9,573

STATEMENT OF INCUMBRANCES.

Borough of Brooklyn.

1902.

Number of incumbrances removed	...	770
Number of incumbrances removed	479	
Number of incumbrances released free	192	
Number of unredeemed incumbrances sold at auction	101	
Number of incumbrances carried over from 1901	...	63
Number of incumbrances on hand December 31, 1902	61	
	833	833

1903.

Number of incumbrances carried over from 1902	...	61
Number of incumbrances removed	...	198
Number of incumbrances redeemed	125	
Number of incumbrances released free	40	
Number of unredeemed incumbrances sold at auction	56	
Number of incumbrances disintegrated and valueless	2	
Number of incumbrances on hand December 31, 1903	36	
	259	259

1904.

Number of incumbrances carried over from 1903	...	36
Number of incumbrances removed	...	270
Number of incumbrances redeemed	153	
Number of incumbrances released free	31	
Number of unredeemed incumbrances sold at auction	46	
Number of incumbrances on hand December 31, 1904	76	
	306	306

1905.

Number of incumbrances carried over from 1904	...	76
Number of incumbrances removed	...	564
Number of incumbrances redeemed	362	
Number of incumbrances released free	71	
Number of unredeemed incumbrances sold at auction	186	
Number of incumbrances disintegrated and valueless	1	
Number of incumbrances on hand December 31, 1905	20	
	640	640

BALING PAPER THAT HAS BEEN SORTED FROM WASTE RUBBISH, WILLIAMSBURG BRIDGE LIGHTING PLANT.

Illustration No. 35, see page 85.

CASH RECEIPTS.

	Manhattan and The Bronx.	Brooklyn.	Total.
1902.			
Trimming at scows and dumps	$90,370 63	$2,208 57	$92,579 20
Incumbrance redemptions	10,019 45	1,989 00	12,008 45
Incumbrance sales	685 49	188 91	874 40
Sales of condemned property	9,648 90	935 10	10,584 00
Privilege of dumping	.....	119 00	119 00
Sale of ashes	355 49	.....	355 49
Damages to Department property	14 46	.....	14 46
Totals, 1902	$111,094 42	$5,440 58	$116,535 00
1903.			
Trimming at scows and dumps	$70,151 69	$893 03	$71,044 72
Incumbrance redemptions	7,975 05	507 50	8,482 55
Incumbrance sales	624 86	105 48	730 34
Sales of condemned property	6,869 52	6,730 52	13,600 04
Sale of ashes	537 72	.....	537 72
Damages to Department property	4 82	.....	4 82
Totals, 1903	$86,163 66	$8,236 53	$94,400 19
1904.			
Trimming at scows and dumps	$60,444 31	$1,391 14	$61,835 45
Incumbrance redemptions	9,187 30	775 90	9,963 20
Incumbrance sales	673 73	61 47	735 20
Sales of condemned property	5,877 32	6,088 37	11,965 69
Sale of ashes	200 35	.....	200 35
Damages to Department property	1 97	.....	1 97
Demurrage	15 00	.....	15 00
Totals, 1904	$76,399 98	$8,316 88	$84,716 86

	Manhattan and The Bronx.	Brooklyn.	Total.
1905.			
Trimming at scows and dump	$58,028 00	.....	$58,028 00
Incumbrance redemptions	12,522 55	$1,617 36	14,139 91
Incumbrance sales	1,211 20	120 87	1,332 07
Sales of condemned property	15,184 12	5,647 94	20,832 06
Privilege of dumping	.....	30 00	30 00
Sale of ashes	860 16	.....	860 16
Damages to Department property	960 22	.....	960 22
For Department property lost	1 97	.....	1 97
Rent	1,000 00	.....	1,000 00
Totals, 1905	$89,768 22	$7,416 17	$97,184 39

SUMMARY.

	1902.	1903.	1904.	1905.	Total.
Trimming at scows and dumps	$92,579 20	$71,044 72	$61,835 45	$58,028 00	$283,487 37
Incumbrance redemptions	12,008 45	8,482 55	9,963 20	14,139 91	44,594 11
Incumbrance sales	874 40	730 34	735 20	1,332 07	3,672 01
Sales of condemned property	10,584 00	13,600 04	11,965 69	20,832 06	56,981 79
Privilege of dumping	119 00	.....	.....	30 00	149 00
Sale of ashes	355 49	537 72	200 35	860 16	1,953 72
Damage to Department property	14 46	4 82	1 97	960 22	981 47
Demurrage	.....	.....	15 00	.....	15 00
Department property lost	.....	.....	.....	1 97	1 97
Rent	.....	.....	.....	1,000 00	1,000 00
Totals	$116,535 00	$94,400 19	$84,716 86	$97,184 39	$392,836 44

PILING AND LOADING SNOW INTO CARTS.

Illustration No. 36, see page 112.

COLLECTION IN MANHATTAN, THE BRONX AND BROOKLYN.

BY DEPARTMENT CARTS.

	1902.			1903-			1904.			1905-		
	Cart Loads.	Net Tons.	Cubic Yards.	Cart Loads.	Net Tons.	Cubic Yards.	Cart Loads.	Net Tons.	Cubic Yards.	Cart Loads.	Net Tons.	Cubic Yards.
Ashes	1,687,090	1,687,090	2,614,990	1,590,800	1,590,800	2,465,730	1,703,570	1,703,570	2,604,540	1,735,790	1,735,790	2,690,470
Rubbish	216,000	108,000	1,601,260	279,950	139,970	2,040,740	284,540	142,270	2,061,520	286,800	143,400	2,064,140
Garbage	271,900	237,910	421,440	292,480	255,920	453,340	296,840	259,730	460,090	333,180	291,540	516,440
	2,174,990	2,033,000	4,637,690	2,163,230	1,986,690	4,959,810	2,284,950	2,105,570	5,162,150	2,355,770	2,170,730	5,271,050

BY PERMIT CARTS.

Ashes	373,350	373,350	560,030	456,700	456,700	685,050	454,180	454,180	681,280	496,790	496,790	745,180
Rubbish	49,480	24,740	74,220	50,920	25,460	76,380	50,230	25,120	75,350	45,660	23,830	71,480
Garbage	19,990	17,490	29,990	20,050	17,540	30,070	17,750	15,530	26,610	17,890	15,650	26,830
	442,820	415,580	664,240	527,670	499,700	791,500	522,160	494,830	783,240	562,340	536,270	843,490

BY BOTH DEPARTMENT AND PERMIT CARTS.

Ashes	2,060,440	2,060.440	3,175,020	2,047,500	2,047,500	3,150,780	2,157,750	2,157,750	3,321,820	2,232,580	2,232,580	3,435,650
Rubbish	265,480	132,740	1,675,480	330,870	165,430	2,117,120	334,770	167,390	2,136,870	334,460	167,230	2,135,620
Garbage	291,890	255,400	451,430	312,530	273,460	483,410	314,590	257,260	486,700	351,070	307,190	543,270
	2,617,810	2,448,580	5,301,930	2,690,800	2,486,390	5,751,310	2,807,110	2,600,400	5,945,390	2,918,110	2,707,000	6,114,540

	Miles of Street Cleaned.	Average Sweepers.	Average Carts.
1902	940.1	2,476	a1,059
1903	971.1	2,514	b1,194
1904	998.7	2,454	c1,292
1905	1,017.9	2,402	d1,299

a Brooklyn garbage removed by Contractor.

b Brooklyn garbage removed by Contractor until June.

c Brooklyn, 6 railroad ash stations opened in April; all opened in August.

d Brooklyn daily collection began in May.

LOADING SNOW INTO CARTS.

Illustration No. 37, see page 112.

EXPENDITURES IN THE BOROUGHS OF MANHATTAN, THE BRONX AND BROOKLYN.

	1902.	1903.	1904.	*1905.	Total of Four Years.
General Administration	$31,170 72	$31,070 28	$37,599 72	$37,737 22	$137,577 94
Administration	277,139 39	293,217 90	302,388 39	327,614 25	1,200,359 93
Sweeping	2,090,392 87	2,189,002 80	2,151,270 09	2,137,961 94	8,568,627 70
Carting	1,648,491 35	1,721,823 43	1,710,737 46	1,747,686 66	6,828,738 90
Final disposition of material, including cremation or utilization	938,663 41	916,191 05	1,043,858 42	1,179,765 00	4,078,477 88
Wages, supplies, rents and contingencies	158,964 62	166,196 39	196,063 58	231,450 31	752,674 90
Total, working accounts	$5,144,822 36	$5,317,501 85	$5,441,917 66	$5,662,215 38	$21,566,457 25
New stock plant	4,570 10	8,949 56	8,695 20	22,015 45	44,240 31
New stock or plant (Bond issue)	243,430 65	329,169 99	235,982 74	444,234 78	1,252,818 16
Snow and ice	740,994 42	498,175 32	1,046,250 00	11,074 65	2,296,494 39
Revenue Bond Fund for removal of snow and ice	.....	.....	490,473 57	1,704,410 53	2,194,884 10
Louisiana Exposition	.....	.....	2,500 00	.....	2,500 00
Purchase of automobiles	.....	.....	4,000 00	.....	4,000 00
Acquisition of site for and construction of stable	19,350 00	18,247 80	2,114 57	67,864 97	107,577 34
Grand total	$6,153,167 53	$6,172,044 52	$7,231,933 74	$7,911,815 76	$27,468,961 55

* Part estimated.

	1902.	1903.	1904.	1905.
Mileage	940.1	971.1	998.7	1017.9
Cartloads of material collected	2,174,990	2,163,230	2,284,950	2,355,770
Cartloads of permit material	442,820	527,670	522,160	562,340
Population	3,465,998	3,531,366	3,640,234	3,752,734

Increase mileage in 1905 over 1902	8.27 per cent.	77.8 miles
Increase cartloads of material collected in 1905 over 1902	8.31 "	180,780 load
Increase cartloads of permit material in 1905 over 1902	27.00 "	119,520 "
Increase cartloads of material disposed of in 1905 over 1902	11.40 "	300,300 "
Increase population in 1905 over 1902	8.27 "	286,736 "
Increase in expenditure in 1905 over 1902	10.05 "	

Cost per capita in 1902 was	$1.484
Cost per capita in 1905 was	1.508
Increase	$0.024

DUMPING SNOW INTO RIVER.

Illustration No. 38, see page 112.

DEPARTMENT OF STREET CLEANING.

THE CITY OF NEW YORK.

AN ORDINANCE Regulating the Cleaning of Streets and Sidewalks and Keeping them Clean, and Removing Snow and Ice, Dirt, and other Materials therefrom (as amended by Ordinance approved March 23, 1903), also the Sanitary Code and the Tenement House Act as to Garbage and Ash Receptacles.

AN ORDINANCE regulating the cleaning of streets and sidewalks and keeping them clean, and removing snow and ice, dirt and other materials therefrom in The City of New York.

Be it Ordained by the Board of Aldermen, as follows:

SECTION 1. No person or persons shall throw, cast or lay, or direct, suffer or permit any servant, agent or employee to throw, cast or lay any ashes, offal, vegetables, garbage, dross, cinders, shells, straw, shavings, paper, dirt, filth or rubbish of any kind whatsoever in any street in The City of New York, either upon the roadway or sidewalk thereof, except that in the morning before eight o'clock or before the first sweeping of the roadway by the Department of Street Cleaning, in the boroughs of Manhattan, Brooklyn and The Bronx, dust from the sidewalk may be swept into the gutter, if there piled, but not otherwise, and at no other time.

The willful violation of any of the foregoing provisions of this section shall be and is hereby declared to be a misdemeanor and shall be punished by a fine of not less than one dollar nor more than ten dollars, or by imprisonment for a term of not less than one nor more than five days.

SECTION 2. No persons other than an authorized employee or agent of the Department of Street Cleaning, or the Bureau

of Street Cleaning in the boroughs of Queens or Richmond, shall disturb or remove any ashes, garbage or light refuse or rubbish placed by householders, or their tenants, or by occupants or their servants, within the stoop or area line, or in front of houses or lots, for removal, unless requested by residents of house.

SECTION 3. It shall be the duty of all persons and corporations engaged in sprinkling the streets of The City of New York to use on asphalt pavement a quantity of water sufficient thoroughly to wash off and clean the same, and on all other pavements to use not more water than shall be sufficient to lay the dust thereon.

Every street railroad corporation in the boroughs of Richmond and Queens shall sprinkle the pavement between its tracks and rails when and as often as directed so to do by the Superintendent of Highways. Water shall be furnished for this purpose free of charge by The City of New York.

SECTION 4. No one being the owner, driver, manager or conductor of any cart or other vehicle, or of any receptacle, shall scatter, drop or spill, or permit to be scattered, dropped or spilled, any dirt, sand, gravel, clay, loam, stone or building rubbish, or hay, straw, oats, sawdust, shavings or other light materials of any sort, or manufacturing, trade or household waste, refuse, rubbish of any sort, or ashes or manure, garbage or other organic refuse or other offensive matter therefrom, or permit the same to be blown off therefrom by the wind, in or upon any street, avenue or public place.

SECTION 5. No person shall throw, cast or distribute in or upon any of the streets, avenues or public places, or in front yards or stoops, any hand-bills, circulars, cards or other advertising matter whatsoever.

SECTION 6. Every owner, lessee, tenant, occupant or other person having charge of any building or lot of ground in the city, abutting upon any street, avenue or public place where the

PUSH CARTS IN STREET.

Illustration No. 39, see page 115.

sidewalk is paved, shall within four hours after the snow ceases to fall, or after the deposit of any dirt or other material upon said sidewalk, remove the snow and ice, dirt or other material from the sidewalk and gutter, the time between 9 P. M. and 7 A. M. not being included in the above period of four hours; provided, however, that such removal shall in all such cases be made before the removal of snow and ice from the roadway by the Commissioner of Street Cleaning, or by the Borough President of Queens or Richmond, or subject to the regulations of said Commissioner of Street Cleaning or of said Borough President of Queens or Richmond for the removal of snow and ice, dirt and other material, except that in the boroughs of Queens and Richmond any owner, lessee, tenant or occupant or other person who has charge of any ground abutting upon any paved street, avenue or public place for a linear distance of 500 feet or more, shall be considered to have complied with this ordinance, if such person shall have begun to remove the snow and ice from the sidewalk and gutter before the expiration of the said four hours, and shall continue such removal and shall complete it within a reasonable time. [As amended by ordinance approved March 23, 1903.]

SECTION 7. In case the snow and ice on the sidewalk shall be frozen so hard that it cannot be removed without injury to the pavement, the owner, lessee, tenant, occupant or other person having charge of any building or lot of ground as aforesaid, shall, within the time specified in the last preceding section, cause the sidewalk abutting on the said premises to be strewed with ashes, sand, sawdust, or some similar suitable material, and shall, as soon thereafter as the weather shall permit, thoroughly clean said sidewalk.

SECTION 8. Whenever any owner, lessee, tenant, occupant or other person having charge of any building or lot of ground abutting upon any street or public place where the sidewalk is paved shall fail to comply with the provision of any ordinance of the city for the removal of snow and ice, dirt or other ma-

terial from the sidewalk and gutter in the street, on the side of the street on which such building or lot abuts, the Commissioner of Street Cleaning or the Borough President of Queens or Richmond may cause such removal to be made, meeting such expense from any suitable Street Cleaning or Highway fund and thereafter the expense of such removal as to each particular lot of ground shall be ascertained and certified by the said Commissioner of Street Cleaning or by the President of Queens or Richmond to the Comptroller of the City, and the Board of Estimate and Apportionment may authorize such additional expenditures as may be required for the said removal of such ice and snow, dirt, or other material, to be repaid to the fund from which the payments were made, or instead, in the Boroughs of Queens or Richmond to the special fund, "Restoring and Repaving," in said boroughs, if the presidents of these boroughs so elect, with proceeds from the issue and sale of revenue bonds which shall be sold by the Comptroller, as provided by law. The Commissioner of Street Cleaning or Borough Presidents of Queens or Richmond shall as soon as possible, after the work is done, certify to the Corporation Counsel the amount of the expense chargeable against each piece of property.

The Corporation Counsel is hereby directed and authorized to sue for and recover the amount of this expense, together with three (3) dollars penalty for each offense, and when so recovered the amount shall be turned over to the City Chamberlain to be deposited to the credit of the general fund of The City of New York for the reduction of taxation. [As amended by ordinance approved March 23, 1903.]

Section 9. It shall be the duty of the Commissioner of Street Cleaning and the Borough Presidents of Queens and Richmond, immediately after every snowfall or the formation of ice on the crosswalks or in the culverts or paved streets, avenues or public places, forthwith to cause the removal of said snow and ice from the said crosswalks and culverts, and to keep the crosswalks and culverts aforesaid clean and free from obstruction.

PUSH CARTS IN STREETS.

Illustration No. 40, see page 115.

SECTION 10. Every street railroad corporation shall remove all the snow and ice from its tracks and the spaces between, and shall not throw the same on either side thereof, and shall immediately carry away and dispose of the same under the direction of the Commissioner of Street Cleaning, or the Borough President of Queens or Richmond, under a fine of one hundred dollars for every city block in length in which the said corporation shall fail to so remove and dispose of the same, as aforesaid; provided, however, that for the more speedy and effective removal of snow and ice from the paved streets, avenues and public places of the city, the Commissioner of Street Cleaning and the Borough Presidents of Queens and Richmond shall have power and authority in their respective boroughs to enter into agreements for the entire winter season, or part thereof, with any street surface railroad or other railroad having tracks in the city for the removal of snow and ice for the entire width of the street, avenue or public place, from house-line to house-line, at any part of the route of the said railroad, provided that nothing in said agreements shall be inconsistent with any law of the State of New York or with any right of The City of New York.

SECTION 11. It shall not be lawful for any surface railroad company or other company, or any corporation or person whatever, or the officers, agents or servants thereof, to cause or allow any snow plow, sweeping machine or other similar instrument to pass over the tracks or lines used by them within the limits of the city unless by the written permit of the Commissioner of Street Cleaning or the Borough Presidents of Queens or Richmond; any violation of this section shall be punished by a fine not exceeding one hundred dollars for each such offense.

No such permit or renewal thereof shall be granted except upon the condition and agreement upon the part of the company applying for such permit or renewal that the party to whom the said permit has been granted shall and will, at his own expense, promptly remove and carry away the snow thrown up by such plow or machine, and that such snow plow, sweeping machine

or other instrument shall be so constructed as not to throw any slush or snow upon the sidewalks or buildings, under a penalty of ten dollars for every house or sidewalk in front thereof upon which slush or snow shall be thrown.

No such permit or renewal shall be granted unless the party to whom granted shall expressly covenant, stipulate and agree that in case of its failure, neglect or omission to promptly remove and carry away the snow and ice thrown up by such snow plow or other instrument, then the same may be removed under the direction of the Commissioner of Street Cleaning or the Borough President of Queens or Richmond, and the expense of removing the same shall be paid by the said party to the said Commissioner or the Borough President of Queens or Richmond, on demand, and the Board of Estimate and Apportionment may authorize that the amount or amounts of money so paid shall be credited to the appropriation for street cleaning in the respective boroughs for the removal of snow and ice; but nothing herein contained shall be deemed to prohibit said Commissioner or Borough Presidents from demanding, before issuing said permit, and as a condition thereof, the deposit of such sum of money or other security as in their judgment may be necessary to pay the cost of properly performing the work above mentioned, together with the expense of the inspection thereof.

In case of neglect or refusal or omission of the party to whom such permit may be granted promptly to remove and to carry away the snow and ice thrown up by such plow or other instrument, then the Commissioner of Street Cleaning or the Borough President of Queens or Richmond may forthwith cause the same to be removed at the public expense, and all expenditures made or incurred therefor shall be chargeable upon the party so neglecting, refusing or omitting to perform its agreement, and shall be recoverable by an action at law on behalf of The City of New York, and when so recovered shall be placed to the credit of the Department of Street Cleaning or the Bureau of Street Cleaning in the Boroughs of Queens or Richmond, as the case may be.

NEW MARKET UNDER WILLIAMSBURG BRIDGE.

Illustration No. 41, see page 119.

to supply the deficiency occasioned by such additional expenditure.

SECTION 12. Any person violating any provision or regulation hereof shall be deemed guilty of a misdemeanor, and upon conviction thereof by any magistrate, either upon confession of the party or competent testimony, may be fined for such offense any sum not less than one dollar and not exceeding three dollars, except as herein otherwise provided and in default of payment of such fine may be committed to prison by such magistrate until the same be paid, but such imprisonment shall not exceed one day.

SECTION 13. All ordinances of the former municipal and public corporations consolidated in The City of New York regulating the cleaning of streets and keeping them clean, and the removal of snow and ice, dirt or other material from the streets in The City of New York, and all other ordinances, or parts thereof, inconsistent herewith, are hereby repealed.

SECTION 14. This ordinance shall take effect immediately.

Adopted by the Board of Aldermen July 31, 1902.

Approved by the Mayor August 6, 1902.

THE SANITARY CODE.

SECTION 108. It shall be the duty of every owner, tenant, lessee, occupant, or person in charge of any and every building, or place of business in the generally built-up portions of the City of New York, forthwith to provide or cause to be provided, and at all times thereafter to keep and cause to be kept and provided, within such building or place of business, and for the exclusive use of such building or place of business, separate receptacles for receiving and holding, without leakage, all the ashes, garbage, and liquid substances that may accumulate during thirty-six hours, from said building or place of business, or the portion thereof of which such person may be the owner, tenant, lessee, occupant or in charge, and every such receptacle designed

and used to hold ashes shall be made of or lined with some suitable metal.

And it shall be the duty of every owner, lessee or agent of any such building or place of business to cause to be separated and put into their respective receptacles all such materials and substances and such receptacles shall not be filled to within four inches of the top thereof.

And such receptacles, as well as any light refuse or rubbish to be removed, shall be kept within the premises until the proper time for removal, and shall then be placed in the area, or within the stoop-line only, and shall there remain until such materials or substances are removed by the Department of Street Cleaning, but in no case shall such receptacles be placed where they shall be or become a nuisance.

All light refuse or rubbish, likely to be scattered or blown about, shall, before being placed outside of any building or premises for removal, be properly bundled, packed or otherwise secured.

SECTION 109. No person, not for that purpose authorized, shall interfere with the receptacles for ashes, garbage or liquid substances, as provided in accordance with Section 108 of the Sanitary Code, or with the contents thereof; nor shall any person in any way handle or disturb such contents.

TENEMENT HOUSE ACT.

SECTION 109. Receptacles for ashes, garbage and refuse—The owner of every tenement house shall provide for said building proper and suitable conveniences or receptacles for ashes, rubbish, garbage, refuse and other matter.

NEW MARKET UNDER WILLIAMSBURG BRIDGE.

Illustration No. 42, see page 119.

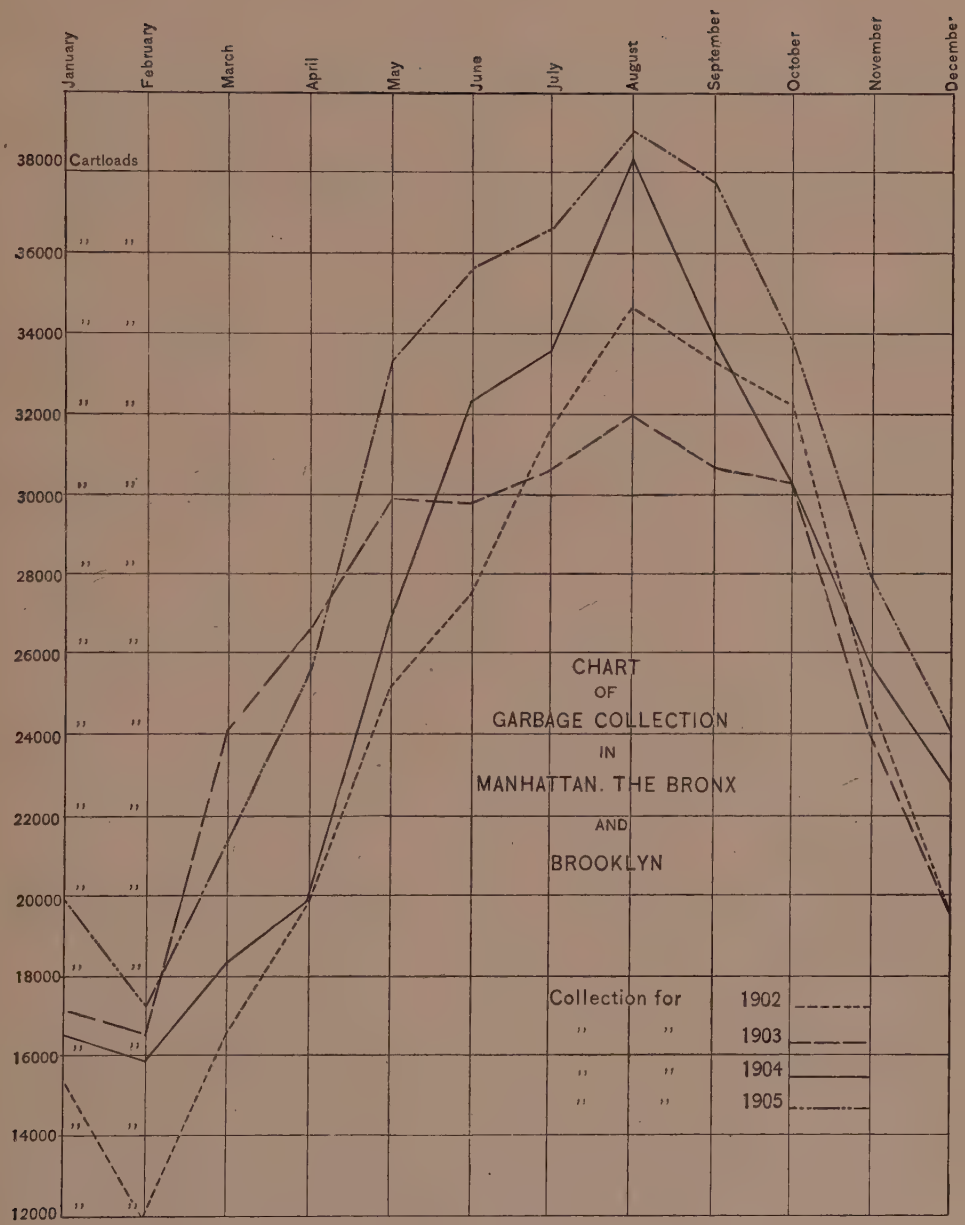

Illustration No. 43, see page 70.

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